AMERICAN GAS ASSOCIATION MONTHLY

Vol. III No. 4

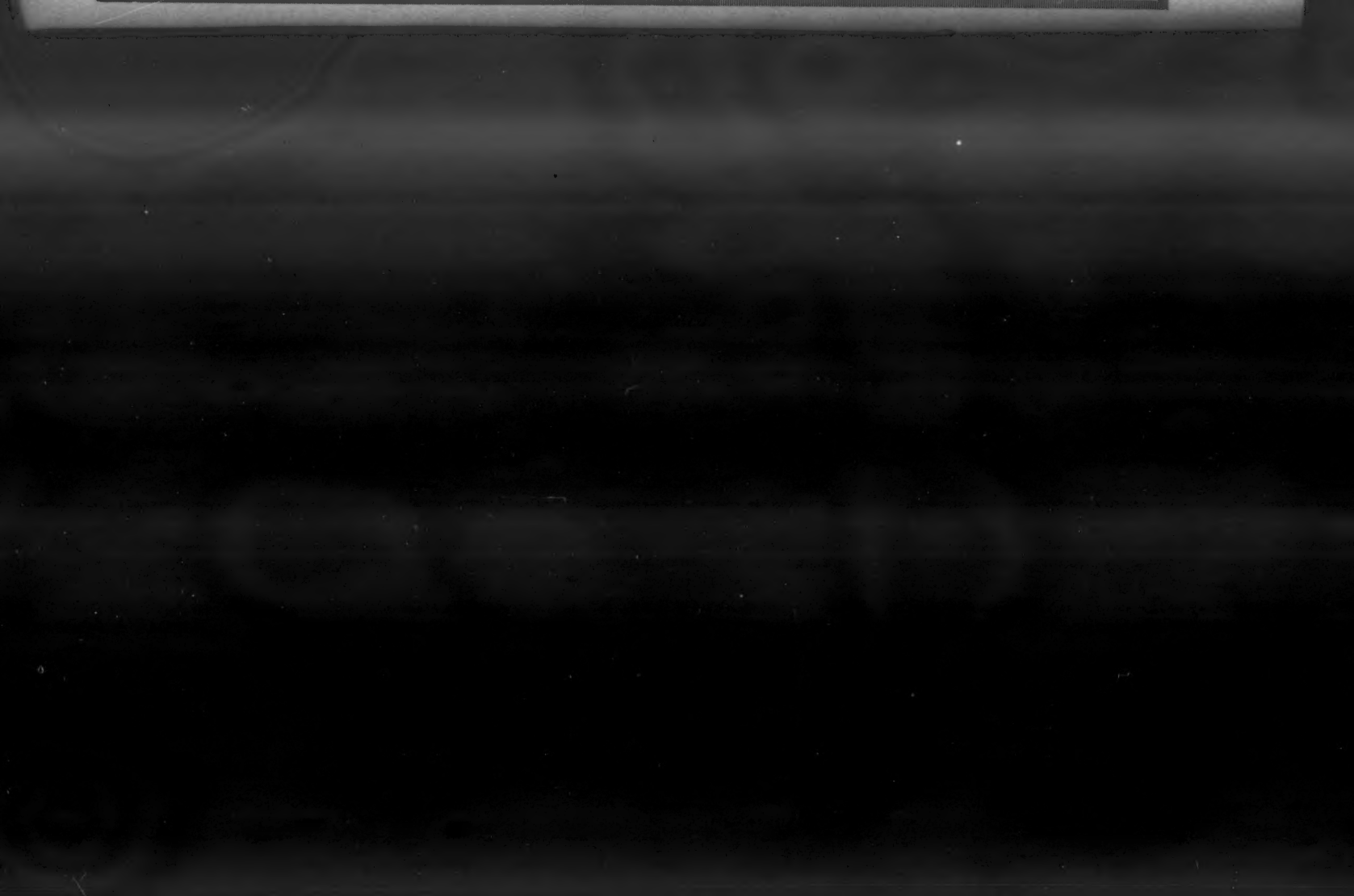
April, 1921

"America must move forward, and the speed and comfort with which she moves will depend in a large measure upon her ability to produce, at low costs, heat, power, and light. Let each community give some thought to its public-utility situation, to the end that we may more quickly give a square deal, not only to the hand that lights the gas stove or turns on the electric switch, but to the investment pocketbook which furnishes the capital as well."

—*Collier's*

ENTERED AS MATTER OF SECOND CLASS AT THE POST OFFICE, EASTON, PA.
Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, Authorized July 16, 1918

Don't wonder why you never receive your MONTHLY when you have changed your address and have failed to notify this office. :: :: ::



CONTENTS

VOLUME III APRIL, 1921 NUMBER 4

PAGE

Affiliated Associations 216
Aiding Employees to Answer Questions 207
Branch Connections from Existing Cast Iron Mains 243
British Gas Rate Increases (Note) 246
Business is Business 240
Classified Directory—Manufacturers of Gas Equipment 247
Cleaning Out Tar Separators 244
Editorial—The Confusion of Tongues 194
Employment Bureau 255
Gas Chemists' Hand Book 241
Gas Companies and Fire Insurance Rates 217
Gas Oil Quotations 214
Good-Will Advertisement (No. 12) 229
Helping Employees to Save Money 205
Illustrated Lectures on Industrial Fuel Sales (Note) 228
Industrial Fuel Sales and Service 236
James P. Conroy 239
Membership Campaign (Manufacturers' Section) 237
Meter Records 219
Method of Cleaning Accumulation of Dirt from Deep Drip 245
New Water Gas Plant at Astoria, The 195
Notice of Gas Chemists' Hand Book Publication 210
Notice of the March Executive Board Meeting 206
Pioneer in the Gas Appliance Industry, A 239
Plan and Result of Campaign on Gas Ranges 231
Plan and Scope of Industrial Fuel Work 211
Public Utilities Reports 215
Suggestions for Forming Company Sections 212
Truths About the Meter 223
You and the Boss 222

AUTHORS

Strobridge, Wm.—The New Water Gas Plant at Astoria 195
Wilson, P. A.—Gas Companies and Fire Insurance Rates 217
Schaper, Henry C.—Meter Records 219
Duvall, B. A.—Plan and Result of Campaign on Gas Ranges 231
Braley, Berton—Business is Business 240
Beadenkopf, Geo.—Branch Connections from Existing Cast Iron Mains ... 243
Adams, O. W.—Cleaning Out Tar Separators 244
Lane, James N.—Method of Cleaning Accumulation of Dirt from Deep Drip 245

FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

AMERICAN GAS ASSOCIATION MONTHLY
OFFICE OF PUBLICATION, EASTON, PA.
SUBSCRIPTION RATE - 3.00 PER YEAR

Entered as Matter of Second Class at the Post Office, Easton, Pa.
Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, Authorized July 16, 1918.

American Gas Association Monthly

ADDRESS ALL COMMUNICATIONS TO THE AMERICAN GAS ASSOCIATION, INC., 130 E. 15th STREET, NEW YORK, N. Y.

Vol. III APRIL, 1921 No. 4

The Confusion of Tongues

Of the tower of Babel could be told innumerable stories, and in many tongues. There is a tower of Babel builded every day; men set out with courage, money, ideas, and enthusiasm; the structure rises to a certain point,—and then plans go awry, enthusiasm wanes, one by one the workers lose interest and drop out, and at last the building ceases, and there is one more Babel in the world. They wanted one thing, without which the finest individual ability is as nothing,—cooperation.

What does the word mean to you? When you declare that a man won't cooperate make quite sure you do not mean that he refuses to agree with you. To cooperate means to get together, to find a common goal and then to construct toward it. If disagreement is experienced it doesn't necessarily signify a lack of cooperation. The mere fact that people are taking enough interest to disagree is often a good sign, so long as the criticism remains constructive. Petty bickering which is only small-mindedness, stops operations, results in stagnation,—and another Babel is left to crumble.

The biggest sort of builders are not those who sit about and inanely agree to whatever one or another has to suggest. They will differ, they will argue, at times they will refuse to listen, they will insist, and they may, sooner or later, fight; but in the end, they will come around to a common viewpoint, a viewpoint that will be in the main, no one man's.

Some men *talk* and some men *do*, and among the latter there is no lack of team spirit; they wouldn't be *doing* if there were. It is those who are not in the habit of getting things done who fail to appreciate the energy lost in divided effort. Lack of cooperation largely finds expression in *talk*. Busy minds are so intent upon the goal that concerted labor is instinct; their vision is so focused upon the heights that they find no time to disagree over the tools their neighbors are using,—they are seeing the finished work.

As in everything else, so in this industry, there is an overpowering predisposition to *talk* about the ideas we have,—to *talk* about the things we are going to do,—to *talk* about our industry's shortcomings. So we talk:—

> "The gas business needs ideas, it's over-conservative,—it needs men who will get out and grapple with its dangers,—it needs the newer spirit, a little self-advertising, more neighborliness, more enthusiasm, more courage than we've got before this industry can be lifted out of the ruts of tradition——"

Of course! But while we talk there are those who are working out the very ideas that are filling our mouths with fine-sounding phrases. Let's get down to doing. Let's realize that *we* are the industry, and what this industry lacks, *we* lack.

It matters little whether it be the coaching of a football squad or the building of a Panama Canal;—the towers of men who work together do not crumble.

AMERICAN
GAS ASSOCIATION
MONTHLY

Vol. III APRIL, 1921 No. 4

The New Water Gas Plant at Astoria

WILLIAM STROBRIDGE,

Asst. Engineer Gas Dept., The Bartlett Hayward Co., Baltimore, Md.

IN THE early winter of 1919-1920 the gas send-out in New York City during peak demands approached so closely the maximum output of the several plants of the Consolidated Gas Company that only by forced operation of every available unit, including those usually held in reserve for emergencies, was it possible to avert a shut-down of some sections of the city.

The officials of the gas company, confronted with a repetition, in the following winter, of the same emergency, magnified by the ever increasing annual demand, promptly decided upon an addition to the plant of The Astoria Light, Heat & Power Company, which would make the fourth complete gas plant erected on its property and would be known as Unit "D."

A contract was accordingly made about the middle of January, 1920, with The Bartlett Hayward Company for the construction of a new 30,000,000 cubic feet daily capacity water gas plant, complete in all respects excepting that the actual construction of buildings, designed and supervised by The Bartlett Hayward Company, was placed with an independent building company, it being understood that the plant would be ready to meet the peak load of the winter of 1920-21.

Due to the totally unexpected nature of the demands which necessitated this construction, little or no planning had been done prior to the placing of the contract. Under normal conditions the construction period for a plant of this size, without the detailed preliminary study that usually covers a period of six to twelve months, would require upwards of two years. With barely ten months allowed for the undertaking some idea of the necessity for speed may be realized.

Added to this the unprecedented de-

mand for all materials of construction for at least the first half of 1920 made deliveries very uncertain, and the transportation systems, especially in the East, were going through a period of readjustment which made the delivery of raw and finished materials still more uncertain.

The plant was ready for making gas early in December, 1920, but the mildness of the weather and the consequent low demand, delayed its operation until December 20th. The few days of cold weather recently, the first of this winter, brought on a total send-out exceeding the maximum demand of the previous winter, but in this case with a comfortable reserve of production capacity.

The completion of this construction in a period of less than eleven months was possible only by the most complete coordination of all of the agencies connected with the construction; coordination first of the contractor's organization, with the engineering organization of the gas company, making out of the contractor's organization practically a department of the directing engineer of the gas company, and finally a coordination within the contractor's organization of all departments, with the result that practically every item entering into the plant construction was scheduled throughout the various departments of the contractor's establishment, commencing with en-

Aeroplane View of Astoria Works—New Unit "D" on Right.

New Generator House "D."

gineering and ending with the erection organization in the field.

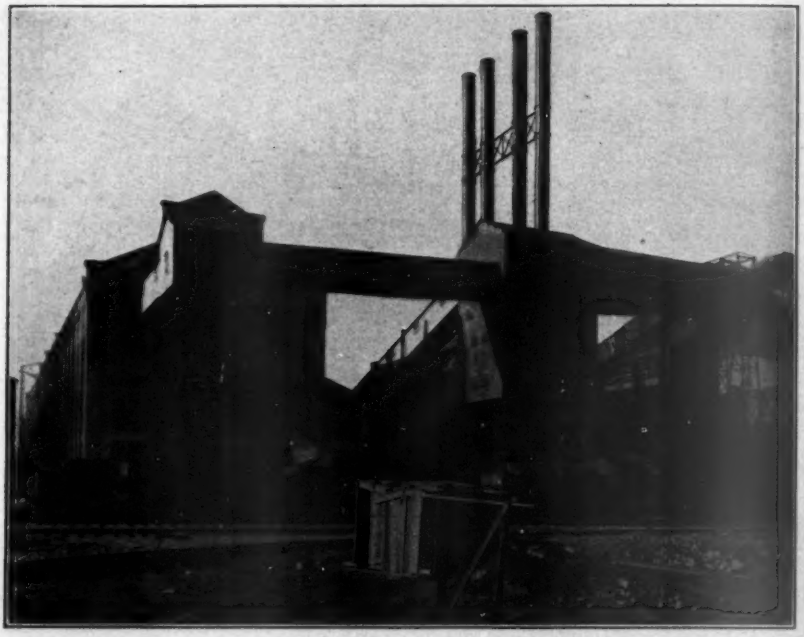
The construction of this plant comprised a generator house with twelve sets of water gas machines; complete fuel and ash handling systems; six salt water condensers; a one million cubic foot relief holder; two tar separating tanks; one tar emulsion tank; four engine driven exhausters; a tar extractor house with six tar extractors; eight shaving scrubbers; twelve purifier boxes; six station meters; a complete system of overhead and underground gas mains; complete piping systems including pumps for fresh water, salt water, tar, oil, steam, drains and sewage; and a complete new boiler plant.

Shipment of material to the plant comprised 542 carloads, not including the miscellaneous brick, structural steel work, and an enormous amount of miscellaneous material purchased locally and delivered directly by truck or lighter.

The operating results of the new plant have fully met and exceeded all expectations.

The fuel is delivered at the rate of 150 tons per hour by a belt conveying system from railroad track hoppers. At a central tower in this system the fines are screened, crushed and diverted to the boiler plant later described.

The generator house fuel is eventually delivered to a belt conveyor, which runs throughout the length of the generator house and from which the fuel is discharged into circular overhead conical bottom bins, having a total storage capa-



Fuel Handling System to Generator Houses "C" and "D" and to New Boiler House.

city of thirty hours. One bin is provided for each water gas set and is located directly above each generator, which is fed by one of the four weigh hoppers running on an overhead track.

The generator house is a steel frame structure with brick walls and Bonanza tile roof and is 362 feet 7 inches long by 87 feet 1 inch wide by 87 feet 3 inches high to the peak of the roof, and includes a two-story lean-to along the entire west side. On the upper floor of this lean-to are located the blowers and Superintendent's offices, while the ground floor is given up to wash and locker rooms and store rooms.

The generator house equipment consists of twelve three-shell water gas sets with 12-foot diameter generators. Each pair of water gas sets is equipped with one 350 H. P. Babcock & Wilcox cross drum water tube steel case waste heat boiler, which is connected to the superheaters of the two sets through special 48-inch water seal valves, enabling the majority of the waste heat in the blast gases to be utilized in generating steam for plant purposes.

Air blast is furnished each set at the rate of 22,000 cubic feet per minute at 44 inches water pressure by individual turbine driven Sturtevant No. 9 Design 5 blowers; the turbines and blowers being directly connected by fast flexible couplings. Exhaust steam from these turbines and from steam driven pumps in nearby boiler and pump houses, supplemented, when necessary, by live steam

supplied through sensitive reducing valves, is used in the generators.

All blast valves, hot valves, purge valves, water seal valves to boilers, generator steam valves and blower turbine throttle valves are operated hydraulically, and each set is operated from an individual control station of special design and equipped with an interlocking system to insure the proper sequence in the operation of the valves. These hydraulic control stations are located along one side of the building away from the heat and adjacent to windows, which will insure suitable ventilation for the operator during the summer months.

The operation of all valves on one set are within the vision of the operator and the maximum output of the set is assured by the minimum amount of time required for the operation of the valves at each change of the cycle of operations.

Adjacent to each control station is a gauge board upon which is mounted a water gas timer, blast gauges, blast flow meters, steam flow meters and recording pyrometers.

Ashes are removed from the generator house by a belt conveyor located in a tunnel directly underneath the generators. The ashes are delivered to an overhead crushing and sizing plant located above three circular reinforced concrete ash storage bins east of the generator house. From these elevated storage bins ashes can be drawn to railroad cars or industrial cars for ultimate disposal.

Generator House "D"—Operating Floor.

The gas from the twelve sets after passing through the wash boxes is collected in a steel foul main running overhead and varying in diameter from 48 inches at each end of the header to 72 inches at the inlet to the condensers.

Six cast iron salt water condensers, each containing 2,000 3-inch diameter cast iron tubes 12 feet 4 inches long, are provided for cooling the gas.

The tar from these condensers and the overflow from the wash boxes in the generator house drain to two steel tar separating tanks, each 90 feet long by 25 feet wide by 8 feet 6 inches deep, located in a concrete pit previously provided for this purpose. The dirty water from these separating tanks is returned to the wash boxes by means of turbine driven centrifugal pumps, located in a new underground extension to the existing pump house. Each pump is capable of delivering 1,000 gallons per minute.

From the condensers the gas passes through a 54 inch diameter overhead steel main to the two lift relief holder, having a capacity of 1,000,000 cubic feet and provided with two 42-inch inlet and two 36-inch outlet connections.

Four Connersville exhausters, direct connected to Buckeye steam engines and each having a displacement of 92.6 cubic feet per revolution were installed in the existing exhauster house. New foundations for these units and alterations to the existing operating floor were included under this contract.

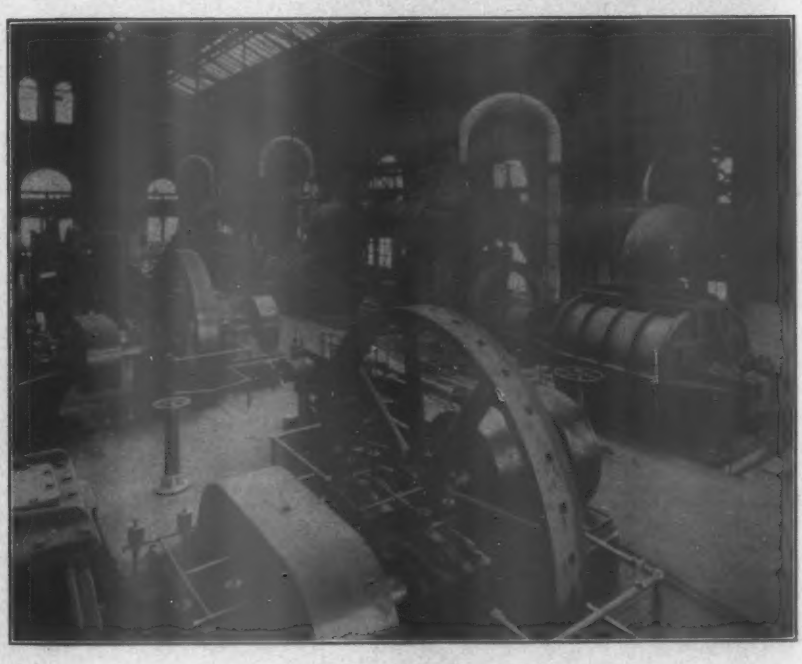
The tar extractor house is 76 feet 1 inch by 34 feet 1 inch by 34 feet high to the peak of the roof and is divided into two rooms by a solid brick partition wall. One of these rooms, which is provided with a basement, contains six 6,000,000 cubic feet tar extractors of the P. & A. type. On the basement of this room are located two small reciprocating pumps for pumping the drips in the underground gas mains in the vicinity of the tar extractor house and shaving scrubbers. The other room is used for the storage of shavings used in the shavings scrubbers, and also contains a turbine driven blower, by means of which the shavings are elevated through a suitable galvanized sheet steel piping to the top of the shavings scrubbers.

The shavings scrubbers are located in the open adjacent to the tar extractor house and comprise eight scrubbers 12 feet in diameter arranged with dumping trays and bottom discharge manholes. Provision is made for draining the tar from these scrubbers to an underground tar main later described.

The steel purifier boxes are 45 feet in diameter and arranged in two rows of six boxes each—each box being provided for 3 foot 4 inch layers of oxide. Each row is enclosed in a rectangular brick enclosure 277 feet long by 47 feet wide, which extends from the ground level to the top of the boxes. At the top of the boxes a reinforced concrete floor is provided, which serves both as an operating floor and as a roof for the brick enclosure. The boxes are elevated above the ground on steel supports and the gas connections are carried underneath the boxes.

The valves in the connections permit the operation of the boxes in four series of three or in two series of six and further provision is made for straight flow or divided flow. The direction of flow of gas can also be reversed in each row of boxes.

Control Stations and Gauge Boards for Two of the Twelve Water Gas Sets.



Exhausters for Units "C" and "D."

Purifiers amd Crane.

The valves for controlling the boxes are operated from the reinforced concrete floor at the top of the boxes. The boxes are provided with a low pressure steam heating system using either live or exhaust steam.

The covers, which are 40 feet in diameter, are raised and transferred by a special crane, having a span of 110 feet which covers the two rows of boxes. This crane is provided with electric motor traversing and lifting mechanism, and further carries a man trolley, equipped with a 54 cubic foot bucket and a 1-ton auxiliary hoist, which are controlled by one operator located in the car of the trolley. This trolley travels across the boxes, using the bucket for filling and emptying and the auxiliary hoist for handling the purifier trays when the boxes are being emptied.

Between the two rows of boxes there is provided a concrete oxide trench, which is filled with oxide by side-dump cars, operating on an industrial track running parallel with the trench. Oxide is handled from this trench into the boxes by means of the grab bucket previously mentioned. Similarly, the grab bucket is used for emptying the boxes and depositing the spent oxide in the side-dump industrial cars. The purifier boxes are further equipped with standard dumps in the bottom of the boxes.

The gas is measured by six 16 feet diameter station meters of the Hinman wet drum type, which were installed in an existing building. In the basement of

this building there are provided two reciprocating pumps for pumping the drips in the underground gas mains adjacent to the purifiers and also two vacuum pumps for the purifier heating system.

Tar drains from the purifier boxes and shaving scrubbers, as well as the discharge from the drip pumps, is collected in an underground cast iron main running back to the tar separating tanks. Provision is made for heating this return before it is discharged into the separators.

All gas mains from the outlet of the relief holder to the meters are 48-inch cast iron pipe, laid underground, with the exception of the headers for the purifier boxes, for which two 36-inch cast iron mains are provided.

Additions to the existing pump house were provided for the housing of three steam turbine driven centrifugal pumps for dirty water circulation, three steam turbine driven centrifugal pumps for hydraulic pressure, and five reciprocating pumps for handling oil, tar and water supply to the water seal valves for the waste heat boilers.

The boiler house is 81 feet 9 inches by 45 feet 4 inches by 55 feet 2 inches to the peak of the roof, and is a steel frame structure with brick walls and Bonanza tile roof. Four 600 H. P. Babcock & Wilcox water tube boilers, arranged in two batteries, are supported on the upper floor 14 feet above the ground floor, and are equipped with Coxe stokers arranged for burning coke breeze properly sized

Station Meters for Units "C" and "D"—Largest Installation in the World.

by the screening and crushing apparatus previously mentioned in connection with the fuel handling system. The stokers are driven by slip ring alternating current motors with speed control resistance and shift gear boxes for variations in speed.

Fuel is delivered to the stokers from overhead steel bunkers having thirty hours storage capacity. Boilers are provided with steel stacks 5 feet 6 inches in diameter by 140 feet high. On the ground floor of the building are located two boiler feed pumps, three forced draft units, the boiler blow-off tank and the ash handling facilities. The boiler feed pumps are of the centrifugal type direct connected to steam turbines; each pump being capable of meeting the maximum demand.

The forced draft units are multivane fans, directly connected to 30 H. P. alternating current motors. Two of these units are required for the operation of all boilers, the third being held in reserve.

Ashes from the stoker grates are discharged into fire brick lined steel hoppers, suspended below the boiler floor and terminating in twin arrow hand operated ash grates. Ashes are withdrawn through these gates into industrial cars which are discharged on one of the belt conveyors of the ash handling system previously described.

Stokers, New Boiler House.

Helping Employees to Save Money

A PLAN has been worked out by the Grinnell Company, Inc. (General Fire Extinguisher Company), of Providence, R. I., through which any of its regular employees or those connected with its subsidiary companies, are provided with a convenient means for saving part of their salary or wages.

This new plan, known as the Grinnell Savings and Investment Fund, becomes effective January 1, 1921, and its progress will be followed with a great deal of interest.

A Board of Trustees selected from among the employees will be responsible for the investment of the funds. The company will also be represented on the Board of Trustees as it guarantees to the subscribers the repayment of their principal and 6 per cent. interest compounding semi-annually.

Series of shares, maturing in five years, will be issued on January 1 and July 1 of each year, and participation in the plan is entirely voluntary with the employees as is also the amount which may be subscribed for except that no employee may contract for shares in excess of one-fifth of his salary or wages. Nor may an employee hold more than 100 shares at any one time. Payment on shares may be made by deduction from wages or salary, when the employee prefers this method.

To illustrate the method, by which the plan will be operated take the case of an employee earning $130 per month. He may subscribe for one-fifth of this amount or 26 shares.

He is not sure that he can save $26.00 per month, so he takes ten shares in the first series issued January 1, 1921, paying $10.00 per month.

In 1922 he finds he can save more so he takes ten shares in Series No. 4, issued July 1, 1922.

He then pays $10.00 for Series No. 1 and $10.00 for Series No. 4, a total of $20.00 per month.

The next year he finds he can save more. He already has twenty shares. The most he can have is twenty-six, so he takes six shares in Series No. 6, issued July 1, 1923.

He pays $10.00 for Series No. 1, $10.00 for Series No. 4, and $6.00 for Series No. 6, a total of $26.00 per month.

On December 31, 1925, Series No. 1 matures and he receives for his ten shares, his principal, $600.00 plus 6 per cent. interest compounding semi-annually at least $9.82 per share, or a grand total of $698.20.

This leaves him ten shares in Series No. 4 and six shares in Series No. 6, or sixteen shares on which he pays $16.00 per month.

He is entitled to twenty-six shares, so he may subscribe for ten shares in Series No. 11, to be issued January 1, 1926, to take the place of Series No. 1, and he continues to pay $26.00 per month.

June 30, 1926, Series No. 4 matures and he receives for his ten shares in that series $698.20. At that time he may take out ten more shares.

June 30, 1927, Series No. 6 matures and he gets for his six shares in that series $418.92 (six shares at $69.82 per share). He may then subscribe for six shares more in the next series.

Thus he always has twenty-six shares and at regular intervals he gets his payments plus 6 per cent. interest compounding semi-annually.

It he wants to withdraw part of his shares he may do so, receiving all he has paid on them with simple interest at 6 per cent. per year. The balance of his shares are not affected by such withdrawal.

If a man takes out a few shares in *each* series as issued, after five years from the date of his first subscription he gets a return each six months as the series mature.

As his wage or salary increases the number of shares to which he is entitled automatically increases.

If a man needs temporary financial assistance he may borrow from the Trustees through his department cashier or other source of pay.

He may borrow not more than 80 per cent. of what he has paid in.

Suppose he needs the money August 13, 1923.

He has six shares in Series No. 1, issued January 1, 1921, and four shares in Series No. 4, issued July 1, 1922.

He has paid in Series No. 1 as follows:

1921—6 shares at $1.00 per share per month, $6.00 per month, 12 months—$72.00.

1922—6 shares at $1.00 per share per month, $6.00 per month, 12 months—$72.00.

1923—6 shares at $1.00 per share per month, $6.00 per month, 8 months—$48.00.

He has paid in Series No. 4:

1922—4 shares at $1.00 per share per month, $4.00 per month, 6 months—$24.00.

1923—4 shares at $1.00 per share per month, $4.00 per month, 8 months—$32.00.

Total paid in—$248.00.

80 per cent. of $248.00 = $198.40.

He may borrow only in multiples of $50.00, so he may borrow $150.00.

On this he pays 6 per cent. simple interest until he pays off the loan. This he may do at any time, but he must pay in multiples of $10.00.

As fast as he reduces the loan, the amount on which interest is charged is reduced.

If he continues his dues he is still getting 6 per cent. interest on *all* he has paid in and if he pays back all of his loan with simple interest he will get the compound interest on the maturity of his shares.

It is the intention of the Board of Directors from time to time, depending upon business conditions and the enthusiasm which the employees show for this savings investment plan, to donate to this fund certain amounts from the company's profits.

Full information regarding this plan may be obtained by writing to the Industrial Service Bureau, General Fire Extinguisher Company, 260 West Exchange St., Providence, R. I.

On March 16th the Executive Board met in Chicago. After lunching with President Munroe at the Chicago Club, the Board transacted its business and attended the Joint Meeting and Banquet of the Illinois gas, electric and street railway associations at the Hotel Sherman.

Aiding Employees to Answer Questions

Reprinted from the U. G. I. Circle

"KNOW your Company's business if you would make friends of its patrons." This is the excellent idea back of a new plan for educating employees in the minutest details of the gas service in the Fort Wayne territory which has been inaugurated by S. E. Mulholland, vice-president of the Northern Indiana Gas and Electric Company, Southern Division. Mr. Mulholland has prepared and placed in the hands of all employees a set of questions and answers. After studying them, the employees are in a position to answer in an official and authoritative manner questions asked by consumers. Splendid results have been obtained from the idea. The questions and answers follow:

WHY IS THE PRICE OF GAS NOW $1.35, WHEN IN 1916 IT WAS ONLY 85¢?

Answer—Because of the higher cost of materials and labor used in the manufacture of gas. It takes about 3½ gallons of gas oil to make 1,000 feet of gas and about 30 pounds of coke to 1,000 feet of gas. The following are the comparative costs of gas oil, coke, steam coal and taxes for the years 1916 and 1920:

	1916	1920	Increase
Gas oil	3¢ gal.	11¢ gal.	8¢ gal.
Coke	$4.50 ton	$16.50 ton	$12.00 ton
Steam coal	$2.03 ton	$5.43 ton	$3.40 ton
Taxes	$11,038.00	$41,359.00	$30,321.00

making the increase in the cost of gas per 1,000 cubic feet for these *four things alone*, as follows:

	1516	1020	Increase
Gas oil	10½¢	38½¢	28¢ per 1,000 cu. ft.
Coke	7¢	25¢	18¢ per 1,000 cu. ft.
Steam coal	2¾¢	5¢	2¾¢ per 1,000 cu. ft.
Taxes	2¢	5¢	3¢ per 1,000 cu. ft.

Increase for above items per 1,000 cubic feet, 51¾¢.

Former price of gas—1916, 85¢; 1920, $1.35; increase 50¢.

In the same period the price of gas coal has increased from $2.94 per ton to $5.64 per ton. In addition there have been many other large increases in the cost due to increased wages, material for repairs, miscellaneous supplies, etc.

WHY DOES NOT THE PRICE OF GAS DECREASE AS OTHER PRICES HAVE?

Answer—Prices of all things do not rise and fall the same, as to a great extent special conditions govern market prices of different products. Prices of luxuries rose first and highest when demand was greatest and fell most rapidly when demand ceased. Increase in price of gas lagged far behind increased cost of manufacture due in part to willingness of utilities to help share war burdens, and in part to slowness of rate making body. When increases in rates were granted they were late and insufficient as the rapidly mounting costs had absorbed the additional revenue asked for even before the new rate was granted. The price of gas cannot reasonably be expected to decrease until manufacturing materials and labor are much lower and until at least part of the losses suffered during the past have been regained.

WHEN WILL GAS BE SOLD AT THE OLD RATES AGAIN?

Answer—At such times as decreased cost of manufacture justifies. The cost of gas manufacturing materials will fall very gradually and we need not look for former low or prewar prices for several years.

HOW DOES PRICE OF GAS IN FORT WAYNE COMPARE WITH CITIES OF LIKE SIZE?

Answer—It is lower. List of a few cities of approximately the same size or larger showing rates and population follows:

	Population 1920	Gas rate per 1000 cu. ft.
Portland, Me.	69,272	$1.85
Worcester, Mass.	179,754	1.65
Waterbury, Conn.	91,410	1.60

Albany, N. Y.	113,344	1.50
Schenectady, N. Y.	88,723	1.50
Evansville, Ind.	85,264	1.35
Fort Wayne, Ind.	86,549	1.35

WHY IS THE PRICE OF GAS IN INDIANAPOLIS ONLY 60¢?

Answer—The plant which supplies the city of Indianapolis is not a gas plant, but a coke oven plant and their gas is a by-product. A plant like this is possible only when a wide market can be secured for the sale of coke. Recently the Indianapolis Gas Company petitioned the Public Service Commission for an increase to 90¢ per 1,000 cubic feet, stating that the market for their coke, etc., was getting less profitable and they would need an increase in the gas rate.

WHO DETERMINES THE GAS RATE AND HOW?

Answer—Upon application for a change in rates by the city or the company, the Public Service Commission fixes a date for a public hearing. The accountants for the Commission then make an audit of our books to determine what our costs and income have been, and their engineers make a physical valuation of our property. At the time of hearing both sides publicly present their cases, and the Commission, after due consideration, issues an order fixing the rate, and defining the reasons for the order. The rate is based on our actual expenses, and is fixed to yield a 6 or 7 per cent. return upon the Commission's valuation of our physical property.

DOES NOT THE INTEREST ON STOCKS AND BONDS REPRESENT A DOUBLE BURDEN ON THE PUBLIC?

Answer—No. Generally the capital stock and bonds represent the investment in the property. But the amount of stocks and bonds outstanding has no effect on the rates, as the Commission fixes the rate on their physical valuation of our property. This valuation is made by their engineering staff from an inventory of works, mains, etc., and priced by them without reference to cost carried on our books. In making a rate for gas the Public Service Commission pays no attention to what amount of stock or bonds are on the property. They do not care whether the amount of stocks and bonds is a billion dollars or only one dollar. They base the rate on the valuation they make on the company's property and it is usually much too low.

IS THE GAS BUSINESS PROFITABLE IN FORT WAYNE?

Answer—No. Allowing 8 per cent. (a fair return) for interest on investment and the usual allowance for depreciation on the Commission's low valuation of $2,545,000 the Fort Wayne District has shown a *deficit* for *each* of the last five years, substantially as follows:

1916	$ 45,000
1917	113,000
1918	126,000
1919	97,000
1920	179,000
Total deficit for five years about	$560,000
Or an average per year of	$112,000

In other words the price of gas should have been during these years enough higher as to have given the company at least $560,000 more earnings during the past five years than it has had.

WHO IS THE LOSER?

Answer—The people who have their money invested in the property in Fort Wayne who have had only 3 or 4 per cent. on it when they should have had at least 8 per cent.

HOW HAS THIS AFFECTED THE COMMUNITY?

Answer—It has left the company without means to enlarge and improve its plant, and extend the gas mains in new streets, and unless the company is allowed to charge a price for gas that will provide the money, it cannot take care of the public, and the city will be the sufferer in the end.

WHY DO THEY CHARGE ME $1.00 WHETHER I USE ANY GAS OR NOT?

Answer—You are provided with a meter so that you can burn gas, and furthermore the organization is on hand to give you service whenever wanted. Every one connected to the mains should stand their part of the expense

the company is put to to provide service. The proportion of the interest on the investment in works, mains, service and meter, and of the expense of being ready to serve is properly chargeable to each consumer connected to our mains. It costs the company over $1.00 per consumer per month to be ready to furnish gas exclusive of the cost of any gas used.

While the following does not pertain to gas rates, it is information that employees should cheerfully and courteously give to our consumers, when they make an inquiry in regard to any of these matters. *All employees should, whenever possible, give to customers the information as given above in regard to gas rates,* but the following information should be used only upon inquiry by a customer.

WHAT IS THE MATTER WITH MY STOVE?

Answer—Tell them *what the matter is.* For instance, whether adjustment, dirt in orifices, etc., whatever it is—do not grunt something they cannot understand.

WHAT CAUSED THE ORIFICE AND BURNER COCK TO STOP UP?

Answer—There is grease put on the burner cock and in time dust settles on this and cuts down the size of the orifice and thus shuts off the flow of gas. Sometimes something boils over on the stove and this gets into the burner or orifice.

HOW MANY B. T. U.'s ARE IN THE GAS?

Answer—560 to 570. The old ordinance with the city from 1908 to 1918 called for only 550 B. t. u.'s. We now furnish a higher B. t. u. gas.

WHY DOES THE METER RUN WHEN I AM NOT USING GAS?

Answer—This is impossible.

BUT IT CLICKS AT TIMES WHEN NO GAS IS BEING CONSUMED.

Answer—If such is the case, I think you will find that there is a pilot light burner some place, either on a light, stove lighter or some other appliance or perhaps a small leak somewhere that the gas escapes from without a noticeable odor, for instance, near a window.

DOES THE GAS COMPANY WANT PEOPLE TO KNOW HOW TO READ THEIR METERS?

Answer—Yes. The Gas Company wants its customers not only to know how to read their meters but to read them and check their gas consumption from time to time.

MY GAS BILL IS HIGHER IN WINTER MONTHS THAN IT IS IN THE SUMMER WHEN I AM CANNING FRUITS, Etc. WHY IS IT?

Answer—The starting temperature of the food and water that must be heated in cooking will be much lower in the Winter than in the Summer, therefore, a larger quantity of heat will be needed to bring the food or water to the boiling point. The radiating loss from the cooking vessels, because of the low temperature of the surrounding air, will also be much higher in the Winter than in the Summer and will cause increased gas consumption.

WHY DOES IT TAKE TWICE AS LONG FOR MY TANK HEATER TO HEAT WATER FOR A BATH AS IT DID LAST YEAR JUST AFTER IT WAS INSTALLED?

Answer—Burners on a circulating water heater if not kept properly cleaned and adjusted will waste gas and take longer to heat the water. The deposit of soot caused by improper combustion also caused by the chilly action of the cold water on the gas flame increases gas consumption. All tank heater coils should be dusted off frequently and if soot has accumulated it should be cleaned off. Very few people ever pay any attention to tank heaters after they have remained in basement all the Winter while the furnace is in use. Much of the trouble consumers have with tank heaters is caused by the filling of the coils with a lime deposit due to the hard city water.

WHY DO BURNERS ON MY RANGE POP?

Answer—Improper adjustment of appliances.

WHY IS MY GAS BILL HIGHER THAN MY NEIGHBOR'S WHEN WE DO LESS COOKING AND BAKING THAN THEY DO?

Answer—No two people use gas exactly alike. Your neighbor may have some way of

heating the kitchen by use of coal or wood and may do most of the cooking on the wood or coal stove.

WHY HAVE WE GOOD GAS PART OF THE TIME AND NOT AT MEAL TIME?

Answer—There may be a trap in your house line or service from the meter to the main which will fill up with water and interfere with the flow of gas. Have man go out and blow service. The quality of gas is tested three times a day and is as good gas as any company in the United States can make. If consumer is having any trouble, it is due to local conditions that we can remedy.

WHY DO BOTTOMS OF KETTLES GET BLACK AND GREASY?

Answer—On account of appliance being out of adjustment.

WHY DO WE GET A GAS BILL WHEN OUR METER HAS NOT BEEN READ?

Answer—Our meter readers are instructed not to estimate or report a reading when they have not been able to gain entrance to house to read meter, and therefore you should not have been billed.

WHY DO WE GET A NOTICE AND NO GAS BILL?

Answer—The Company's policy is to deliver the gas bills to the house. In case you do not receive a bill within three or four days after the meter has been read, call telephone No. 5000 and we will gladly send a duplicate bill or give you the amount of your gas bill over the phone.

HAS THE INCREASE IN FREIGHT RATES BEEN GREAT ENOUGH TO AFFECT THIS COMPANY'S COST OF GAS?

Answer—Yes, very much so. The present *freight rate alone* on gas coal, steam coal and gas oil is more than the total cost, both purchase price and freight of these materials delivered at our works in 1915.

	1915 Cost of product	1915 Freight rate	1915 Total del. cost	1921 Present freight rate alone
Steam coal, per ton	$0.90	$0.95	$1.85	$1.94
Gas coal, per ton	1.30	1.60	2.90	3.22
Gas oil, per gal.	2¢	2¢	4¢	4 4/10¢

Be courteous at all times. A polite answer given the customer to any question makes friends for yourself and the company. If you cannot intelligently answer what they wish to know, make a note of it and turn it over to your superior when you get back to shop or office. The customer will be answered by mail and will appreciate your thoughtfulness in having the matter given attention.

To create a better standard of performance---

And to see that such standard is uniformly adopted---

is one of the most important contributions an association can make to the advancement of the industry it represents. We announce on page 241 of this issue the publication of the revised edition of the

GAS CHEMISTS' HANDBOOK

No more vital field for standardization exists than chemistry,---upon the principles of which the very existence of our product is based.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. HALL, New York, N. Y.
Award of Beal Medal—CHARLES A. MUNROE, Chicago, Ill.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Chamber of Commerce, Representatives in—GEORGE B. CORTELYOU, New York, N. Y.
Convention Program—J. B. KLUMPP, Philadelphia, Pa., G. I. VINCENT, Vice-Chairman, Syracuse, N. Y.
Cooperation with Educational Institutions—J. A. NORCROSS, New Haven, Conn.
Educational—WALTON CLARK, Philadelphia, Pa.
Finance—E. H. ROSENQUEST, Bronx, N. Y.
Gas Safety Code—W. R. ADDICKS, New York, N. Y.
National Fire Protection Assn., Membership in—W. R. ADDICKS, New York, N. Y.
Nominating—CHARLES L. HOLMAN, St. Louis, Mo.
Rate Fundamentals—R. A. CARTER, New York, N. Y.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
Standard Pipe Threads (International)—W. CULLEN MORRIS, New York, N. Y.
United States National Committee of the International Commission on Illumination, Representatives on—HOWARD LYON, New York, N. Y.

Plan and Scope of Industrial Fuel Work
1920-1921

IN order to arouse a greater interest in the subject of gas utilization especially as it applies to the manufacturing industries it is the plan of the American Gas Association to endeavor to reach manufacturing executives and others interested in the subject of fuel through the medium of trade journals, national associations of the several industries, and pamphlets issued from time to time from the Association headquarters staff, giving a brief account of the practical application of gas to a few of the more general uses.

A selected list of 45 trade journals has been prepared in which articles dealing with the utilization of gas might be inserted with profit both to the gas industry and the particular trade or industry in the interest of which the journal is published.

Also a list of 40 national organizations holding annual conventions has been prepared.

It is possible that some of these associations issue a paper or magazine periodically to their membership, and an effort will be made to use such publications as a means of setting forth the possibilities of gas fuel in the particular industry.

Plans also will be made to present talks or papers on gas utilization before their national conventions either by a member of the Association's headquarters staff, or by some capable member of the Association who may be so situated that he can attend the convention without undue sacrifice of time and expense.

The unusual interest manifested on the part of our company members in the pamphlet "Gas in the Industries — Its Application to Metal Treating" indicates a real need for this sort of publicity. Consequently we shall endeavor to continue similar publications on other subjects and distribute them to member companies at a small charge to cover the cost of printing, as long as the effort is supported by our membership.

Suggestions for Forming Company Sections

THE average consumer is not acquainted with the gas company's president or general manager, but he does know the employe with whom he comes in contact. His opinion of the company, favorable or otherwise, is largely the result of contact with the company's employes.

The employes' actions, general conduct and knowledge of the company's policy and service can be advantageously moulded for the best interests of all concerned by means of a company section organization.

Company sections bring the entire personnel of the company into closer and more harmonious relations, create a better understanding of the functions of all departments, offer educational and entertainment facilities which are helpful to the employe, and assist in the establishment of an esprit de corps so necessary to the successful conduct of the business.

For the benefit of those companies who contemplate the formation of a section the following procedure might be helpful:

Starting the Section

The company should arrange for a suitable meeting room, equipped with necessary gas, electric and water supply to provide facilities for demonstrations of equipment and appliances.

A written invitation over the signature of the President or Managing Executive to attend the organization meeting should be extended to all employes of the company. This invitation should explain the general purposes for which the section is to be organized and indicate to what extent the company is prepared to assist in financing the section, providing facilities for meetings and entertainment, etc., etc.

At the outset it should be clearly indicated that the section is for the benefit of the employes, and that they will have complete charge of its management. The officials of the company should therefore not take any active part in directing its affairs. . It is highly desirable, however, in order to maintain the interest of the members and as indicative of the management's interest, that meetings be attended by as many officers and department heads of the company as possible.

At the first meeting the section should be organized, permanent officers elected, and a business and entertainment program followed out.

Program for Meetings

The business programs of the meetings should be arranged with a view to being instructive and interesting to a majority of the members.

The following suggestions might be considered in this connection:

Talks by company officials and department heads on various phases of company policy and operations, public relations, departmental work, definition of good service, reestablishing the credit of utilities, the company's rates, gas and service standards, etc.

Talks by prominent local persons, such as heads of business institutions, Chambers of Commerce, Boards of Trade and other civic associations on subjects of interest to the company's employes.

Presentation and discussion of American Gas Association illustrated lectures covering various phases of the gas industry. (First of these lectures now available.)

Reading and discussion of the American Gas Association booklet "The Men Who Make Friends." (A pamphlet designed to tell the gas company employe how to cultivate friendly relations with the consumer.)

Showing of American Gas Association motion picture film. (This picture should be shown at a special meeting to which should be invited a selected list of prominent local citizens. It is designed to show the essential character of gas service and the need for fair treatment of the utilities.)

Debates or discussions on subjects pertaining to various phases of the company's operations, such as:

The company's window displays. (Window dressing club might be organized in the section and prizes awarded to members suggesting best displays.)

Selling and publicity campaigns. (The company's plans in this connection should be thoroughly discussed so that the members of the organization may become familiar with sales and advertising plans of the company. Here again many valuable suggestions might be offered which would be helpful to the company management.)

Service standards. (Discussion of this subject would bring about a better understanding by the employe of the need for team work and necessity of cooperation between all departments of the company.)

Operating problems. (Every employe should have at least a fundamental knowledge of the manufacture and distribution of gas. The engineer could give a series of talks on these subjects, including the present problems confronting the industry in the matter of high operating costs, extensions of service, etc., etc.)

Talks and demonstrations on the various gas appliances sold by the company. (The employes should be familiar with the construction and utilization of these appliances. The manufacturer's representative would be glad to assist in such matters.)

Demonstration of the use of the Pulmotor.

How the gas meter works.

The effect of works operation on service to the consumer.

Office Efficiency—(This heading offers a wide range of subjects to cover, such as office labor saving devices, handling of customers' records, etc., etc.)

The above are but a few of the many subjects which might be considered at the meetings of a company section.

The many local problems constantly arising in connection with the handling of the company's business should be included in the program of the section's meetings.

Entertainment Features—The business meetings might be followed with some form of entertainment such as a musicale, dance or other amusement, following which refreshments could be served.

Usually there is considerable talent available in the company organization for this purpose.

At intervals it might be advisable to devote an entire evening to some special entertainment to which the members of the section could invite their relatives and friends.

The American Gas Association is ready and willing at all times to be of whatever assistance possible in helping to organize company sections and on request of any member company either Mr. Stotz or Mr. Hall will be glad to aid in such organization work.

MODEL CONSTITUTION AND BY-LAWS FOR COMPANY SECTIONS

(Local conditions should govern the preparation of a Constitution and By-Laws and this is merely a suggestion which may be used as a basis upon which to start.)

ARTICLE I.

NAME

The name of this organization shall be.....

ARTICLE II.

OBJECTS

The objects of this Section shall be—

1. The establishment and maintenance of a spirit of fraternity and helpfulness among the members of this Section.
2. A closer relationship between the various departments of the company.
3. To encourage study, so that the members may become more efficient in their work.
4. To stimulate interest in the gas business by the reading of papers and their discussion, as well as discussion on topics of general interest.
5. To promote the social welfare of its members in every possible manner.

ARTICLE III.

MEMBERS

To be eligible for membership a person must be—

First—An employe of the gas company, or be otherwise qualified to promote the objects of the Section.

ARTICLE IV.

ANNUAL DUES

The regular annual dues of members in this Section shall be..... (optional).

ARTICLE V.

OFFICERS

The officers of the Association shall be as follows—

1. A President, Vice-President, Secretary and a Treasurer.
2. The Board of Directors shall consist of the officers and chairmen of the various committees.
3. The term of all elected officers shall be one year from date of election.
4. Should a vacancy occur in the Board of Directors, the remaining directors shall have power to elect a member to fill the vacancy for the unexpired term of his office.
5. The officers and directors shall retain office until their successors have been appointed.
6. The Board of Directors shall present at the annual meeting of the Section a full report of the finances, and accounting of all business transacted during the year. These reports shall constitute the official records of the Section and be filed by the Secretary.
7. The management of the Section shall be intrusted to the Board of Directors. ..... members of the Board of Directors shall constitute a quorum.

ARTICLE VI.

COMMITTEES

The President shall appoint such committees as he may deem necessary for the promotion of the affairs and the conduct of the business of the Section.

Gas Oil Quotations

Following are the average market prices on gas oil in cents per gallon, f. o. b. refinery:

	Prices Feb. 28	Prices Feb. 21	Prices Jan. 31
Oklahoma	2¼-2½	2¼-2¾	3¾-4
North Texas	2½-3	3 -3½	3½-4½

Public Utilities Reports

PUBLIC Uilities Reports were inaugurated in 1915 to meet the needs of the public utility industry for authentic current information concerning the orders, rulings and decisions of the State public service commissions, which exist in every state except Delaware. All commission decisions that establish any points of interest to the industry are printed in full; others are printed in abstract form. Decisions of the courts of last resort, both State and Federal, on appeal from the commission's decisions, are also printed.

The *Reports* are issued in fortnightly advance pamphlets which are thoroughly indexed and now contain an editorial section of 16 pages, briefly covering the subjects that come before the commissions currently for decision. The boards of discussions are also referred to editorially. Thus by reading the editorial section every two weeks, public utility executives, operating officials, managers, superintendents, department heads, attorneys and engineers may easily keep abreast of all important developments in the field of commission regulation.

The advance pamphlets are reprinted without cost to the subscriber and issued in bound volumes every two months. Both the fortnightly pamphlets and the bound volumes are thoroughly indexed, reference being made to discussions of important points as well as other points decided. At the end of each year an annual index is published. The cost of the entire service, which embraces 26 fortnightly issues, 5 bound volumes and the Annual Index, is $32.50.

It should be remembered that the State public service commissions have broad jurisdiction over public service companies, so broad in fact that the Commissions are to-day passing upon many operating questions. In short, more than half of the decisions deal with matters of that kind, such as financing, economy measures, safety measures, engineering problems, service charges, minimum charges, methods of billing, extensions of service, and in some cases, labor questions. This is notably true in Kansas, where the State Commission is called the Court of Industrial Relations. Public Utilities Reports are as important, therefore, to the engineers, operating officials, managers and superintendents of public utility companies as they are to attorneys.

The price of the publication—$32.50 a year—has not been increased since 1915, although manufacturing costs have almost doubled. It has been the purpose of the originators of the Publication to encourage the widest possible circulation. This would be curtailed if the price were advanced. Accordingly, an effort is now being made to secure a thousand additional subscribers, which are needed to place the Reports upon a self-sustaining basis. They have been maintained for the past six years by the voluntary contributions of a number of the larger public utility holding companies, but these contributions cannot be expected to continue indefinitely. The publication must be placed upon a sound financial basis at an early date or else they will be discontinued.

For further information address the Utilities Publication Committee, 932 Munsey Building, Washington, D. C.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—C. S. Bagg, Montreal
V.-Pres.—E. H. Caughell, St. Thomas, Ont.
2d V.-Pres.—Col. D. R. Street, Ottawa, Ont.
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto
Conv., Aug. 25 and 26, 1921, Montreal

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919
Pres.—H. W. Peck, Mohawk Gas Co., Schenectady, N. Y.
V.-Pres.—C. G. M. Thomas
Treas.—E. H. Rosenquest
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—W. M. Willett, Aurora, Ill.
Sec.-Tr.—R. V. Prather, DeWitt-Smith Bldg., Springfield, Ill.
Conv., 1922

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—W. W. Goodrich, Winchester, Ind.
V.-Pres.—J. D. Forrest
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1921

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—W. H. Taylor, Omaha, Neb.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1921

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—J. W. Batten, Detroit City Gas Co., Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1921

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—J. H. Van Brunt, St. Joseph Railway, Light, Heat & Power Co., St. Joseph, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Mexico Power Co., Mexico, Mo.

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.—Burton Smart, Portland, Me.
V.-Pres.—V. E. Bird, New London, Conn.
R. E. Wyant, New Haven, Conn.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1922

New England Gas Sales Association

Date of Affiliation—Oct. 1, 1919
Gov.—H. J. Pettengill, Jr., Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
Sec.—M. Bernard Webber, 67 Milk St., Boston, Mass.
Annual Meeting, May, 1921

New Jersey State Gas Association

Date of Affiliation—April 25, 1919
Pres.—F. R. Cutcheon, Long Branch, N. J.
V.-Pres.—Jacob B. Jones, Bridgeton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
Conv., April 13, 14, 15, 1921, Philadelphia

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—W. M. Kapus, Northwest Gas & Electric Equipment Co., Portland, Ore.
Sec.-Tr.—W. M. Henderson, 445 Sutter St., San Francisco, Cal.
Conv., Sept. 20-23, 1921, Del Monte, Cal.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
Pres.—J. H. Keppelman, Reading, Pa.
V.-Pres.—E. L. Smith, Towanda, Pa.
Luther Gaston, Lebanon, Pa.
Sec.-Tr.—W. O. Lamson, Chester County Gas Co., West Chester, Pa.
Conv., April 13, 14, 15, 1921, Philadelphia

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
Pres.—C. B. McKinney, 505 Scollard Bldg., Dallas, Tex.
1st V.-Pres.—F. L. Weisser, San Antonio Public Service Co., San Antonio, Tex.
2d V.-Pres.—F. C. Armbruster, Southwestern Gas & Electric Co., Shreveport, La.
Acting Sec.-Tr.—C. H. Seidenglanz, Dallas, Tex.
Conv., Oct. 11, 12, 1921

Southern Gas Association

Date of Affiliation—May 20, 1919
Pres.—E. C. Stothart, Charleston, S. C.
1st V.-Pres.—J. A. Forney, Charlotte, N. C.
2d V.-Pres.—J. C. Nichols, Bluefield, W. Va.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., May 24, 25, 26, 1921, Savannah, Ga.

Wisconsin Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—Bruno Rahn, Milwaukee, Wis.
Sec.-Tr.—Henry Harman, 182 Wisconsin St., Milwaukee, Wis.
Conv., 1922

OTHER ASSOCIATIONS

Natural Gas Association of America

Pres.—Harry J. Hoover, Cincinnati, Ohio
Sec.-Tr.—Wm. B. Way, 904-5 Oliver Bldg., Pittsburgh, Pa.
Conv., May 16, 17, 18, 19, 1921, Cincinnati, Ohio

Society of Gas Lighting

Pres.—Alex. H. Strecker, Newark, N. J.
V.-Pres.—W. Cullen Morris
Sec.—Geo. G. Ramsdell, 130 E. 15th St., New York, N. Y.
Treas.—Wm. J. Welsh
Conv., Dec. 8, 1921, New York, N. Y.

Southwestern Electrical and Gas Association

Pres.—Burr Martin, Dallas, Texas
V.-Pres.—A. Hardgrave
C. E. Corder
A. H. Warren
Sec.—H. S. Cooper, Slaughter Bldg., Dallas, Texas
Treas.—J. B. Walker
Conv., 1921

ACCOUNTING SECTION

W. H. PETTES, Chairman — H. W. HARTMAN, Secretary — EWALD HAASE, Vice-Chairman

MANAGING COMMITTEE — 1921

At Large

BRUNDAGE, H. M., New York, N. Y.
CONOVER, J. L., Newark, N. J.
DOERING, W. A., Boston, Mass.
FERRIS, E. J., (Mfr.) New York, N. Y.
HEINS, J. W., Philadelphia, Pa.
JAMES, F. M., Aurora, Ill.
JOHNSTON, ERNEST, Syracuse, N. Y.
MCLEOD, J. E., St. Louis, Mo.
MEYERS, W. J., New York, N. Y.
SAUER, W. A., Chicago, Ill.
SCOBELL, E. C., Rochester, N. Y.
STERRETT, W. G., Chester, Pa.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canadian)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E. Assn.)
EATON, H. M., Detroit, Mich. (Michigan)
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
HOY, CHAS. W., Glassboro, N. J. (New Jersey)
JAMES, F. M., Aurora, Ill. (Illinois)
MAYNARD, H. B., Waterloo, Iowa (Iowa)
MCCABE, J. B., Dallas, Texas. (South Central)
NORTON, W. F., Nashua, N. H. (N. E. Gas Eng.)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
SHEARON, B. P., Hammond, Ind. (Indiana)
SPENCE, GEO. H., Fayetteville, N. C. (Southern Gas)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Fire Insurance Rates—E. C. SCOBELL, Rochester, N. Y.
Job Order Systems—F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark, N. J.
Continuous Inventory of Fixed Capital—ERNEST JOHNSTON, Syracuse, N. Y.
Standard Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.
State Representatives—EWALD HAASE, Milwaukee, Wis.
Uniform Accounting Nomenclature—W. A. SAUER, Chicago, Ill.

Gas Companies and Fire Insurance Rates

P. A. WILSON, Philadelphia, Pa.

THE quotation from Maeterlinck's "Life of the Bee" on the cover of the February issue of the Gas Association MONTHLY, "One bee, by working alone, can make no honey," very aptly describes the situation of the public utility companies in their efforts to secure reductions in fire insurance rates.

It is positively known that in general fire insurance rates on public utility properties are too high, but the experience of the industry has never been worked up along statistical lines, and this is the only way that companies can prove their case. The showing of the combined fire record of the companies over a sufficient number of years, and the percentage of losses to premiums paid, will do so.

It is suggested, as a matter of interest, that each company have prepared a statement showing its own record over a period of, say, the past ten years. This record should give:

1. Amount of insurance in force, and premiums paid, by years.
2. Amount of fire losses, by years.

This record should be further analyzed to show the amount of insurance, premiums paid and losses on the strictly gas manufacturing portions of the business (also on the electric, if any) and on other property, such as commercial offices, storerooms, garages, etc. It might be of further interest to divide the losses on the gas properties as to their cause, that is, whether from the explosion of gas, or otherwise, as it is the contention of the Underwriters that the explosion hazard of gas plants is very great, but it

is not believed that this is borne out by actual experience.

A Committee is shortly to be formed for the purpose of gathering this necessary data, and it will ask for the cooperation of member companies in the answering of a "Questionnaire" which will likely be sent out to each member company.

Practically all utility properties at the present time, as well as other properties, are rated by the Underwriters under a system of "Schedule" rating; that is, printed schedules are used, with preconceived "base" rates and a schedule of charges and credits for favorable and unfavorable conditions, which schedules are applied by inspectors who make a survey of the plants.

These schedules take various names, according to the territory in which they are used, or are named after their compiler, such as the "Central Traction Schedule," the "General Schedule," the "Dean Schedule," etc. With various modifications of these schedules which are used by various rating authorities.

An application of these various schedules to the same plant would produce widely divergent rates, so that while they have been compiled in an endeavor to scientifically determine the proper charges for the hazards involved, the fact that the Underwriters themselves do not agree on the schedule to be used indicates that they are very much in the dark as to just what the proper rates should be. It does not seem fair that a gas plant in one territory should be paying higher rates than a plant in another territory simply because the rating authorities are using a schedule which produces higher premiums. The possibilities of loss are the same in both territories, and should be measured accordingly.

The trouble seems to be that the Underwriters have but a hazy idea of just what their schedules are expected to do. Reduced to simple principles, the schedules are used to produce premiums sufficient to pay fire losses, expenses, and the profits of the insurance companies. While the insurance companies know what their total losses and expenses are, the amounts which should be borne by any class of property, such as gas plants, for instance, is not known by the Underwriters, except in a very general way, and it is the belief that the gathering together of this information by the gas companies themselves for presentation to the Underwriters will result in a general decrease in rates, very likely by the adoption of schedules which will produce less premium than at present.

The "Dean Schedule" is generally considered by Underwriters to be the most scientific system of rate making yet evolved. Certainly it is the most complicated. No one, so far, has been able to apply it, except a "Dean Schedule Expert." On account of its alleged scientific construction it is being adopted by many rating boards. It has just recently been adopted by the New England Board of Fire Underwriters. The experience with the "Dean Schedule" as applied to gas plants, however, is that it would greatly increase rates over present rates and over the rates produced by the other schedules. If, as is generally believed, rates on gas properties are already too high, there seems to be plenty of work ahead for an Insurance Committee of the American Gas Association to keep in touch with matters of this kind and to

(Continued on page 222)

Meter Records

HENRY C. SCHAPER, *Assistant Secretary, Milwaukee Gas Light Company*

THE following describes a system which keeps accurate record of the movement of all meters, records every operation through which the meter passes, provides for the accurate accounting of meters on hand and in use, and provides for the filing of an original record of each meter owned.

Shop Records

Meters as they are purchased are given a company number and so recorded, the record showing date of purchase, maker, size, manufacturer's number and company number. The company's numbers are progressive and are designated by a metal tag soldered onto the meter.

As the meters are taken from stock and put into use a card 3 inches by 5 inches in size and which we term a "Test Card" is attached to each meter. This card on the face of it shows, on the upper half, "Date Received," "Size," "Manufacturer's Number," "Company Number," "Manufacturer," "Received From," and "Index;" and on the lower half, "Date Set," "Set At," and "Index." (See Form 1.) The reverse side of this card shows the record of the test both on arriving and leaving the meter shop, also the repairs necessary. (See Form 2.)

Meters arriving at our meter shop either from purchased stock or consumer's premises have a test card attached to them with the necessary data thereon. A record called "Meters Entering and Leaving Shop," (see Form 3), is kept by the meter shop clerk of all such meters received by the shop, this record being kept in duplicate form.

Meters are then sent to the testing shop for tests, and the results of the test recorded on the reverse side of the test card together with repairs, if any, which may be necessary. The testing shop keeps a sheet record of all meters tested, showing results of test. (See Form 4.) This record, likewise, is kept in duplicate form.

DATE RECEIVED

Size_____ Mfr. No _____ Co. No. _____

Mfr. _____ Date Bo't _____

Rec'd From _____

Index _____ Taken Out By _____

FORM 1

DATE SET.

Set At _____

Index _____ Set By _____

P 775 50M-4-04

ARRIVING DATE TESTED

CU. FT. AIR OR GAS PASSED		TEST			TEMPERATURE			PRESSURE	
PROVER	METER	O. K.	FAST	SLOW	W.	A.	G.	IN	OUT

Repairs

Leak in Case	Adjust	Sticks	New Diaph.
Leak in Diaph.	Set Valve	Jumps	Miscl. Rep.

FORM II

LEAVING DATE TESTED

CU. FT. AIR OR GAS PASSED		TEST			TEMPERATURE			PRESSURE	
PROVER	METER	O. K.	FAST	SLOW	W.	A.	G.	IN	OUT

The meters are then ready to be put into use. As the meters are sent out these cards are removed and are held against the meter man taking out the meters. Upon completion of the meter man's run he turns in his executed meter orders which are then checked by the shop clerk with the test cards holding against him. The size, company number, and index are checked to see that the set orders and test cards agree, and location where set is noted on the test card. Entries are then made on the record, "Meters Entering and Leaving Shop."

At the end of each day the meter shop makes a report to the office of all meters that have entered the shop by means of the report "Meters Entering and Leaving Shop," the original being sent to the office accompanied by meter orders and test cards, the duplicates being held at the shop for their record.

Beginning with the number of meters on hand at the shop the first of the month, adding thereto the meters received either from purchased stock or consumer's premises, and deducting therefrom the meters sent out, as these totals are obtained from the record of "Meters Entering and Leaving Shop," gives the shop the number of meters on hand at the end of the month or any other balancing period. It is then simply a matter of checking this balance with the actual meters on hand for proof.

Office Records

As the meter orders are received daily at the office they are turned over to the meter order clerk who checks them with the report "Meters Entering and Leaving Shop," comparing size, company number, location and reading. After checking the orders he assorts them by ledger and then tabulates them on a report termed "Tabulation of Additions and Removals." This tabulation is made by ledger, according to size, and all meter orders except such as do not affect the meter balance are considered.

The orders are then sent to the ledger clerks for entry. The ledger clerks make their own tabulation by size of all orders and compare this daily with the meter order clerk's tally. We have found this comparison to be of advantage as the possibility of an error in tabulation is likely, which can readily be determined by a daily check as the orders are then right at hand.

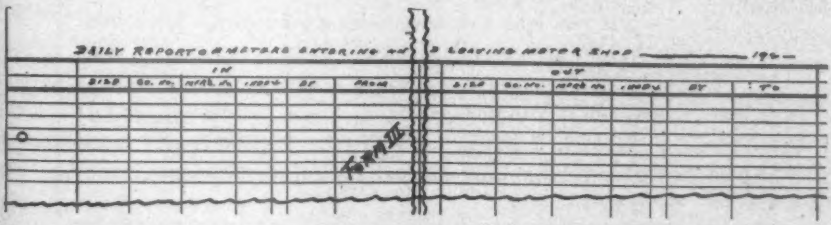
At the end of the month totals of the daily sheets will by addition and subtraction to and from the number of meters in use at the beginning of the month give the total of the meters in use at the end of the month. This total is proven by the actual count of all meters by size controlled by each ledger.

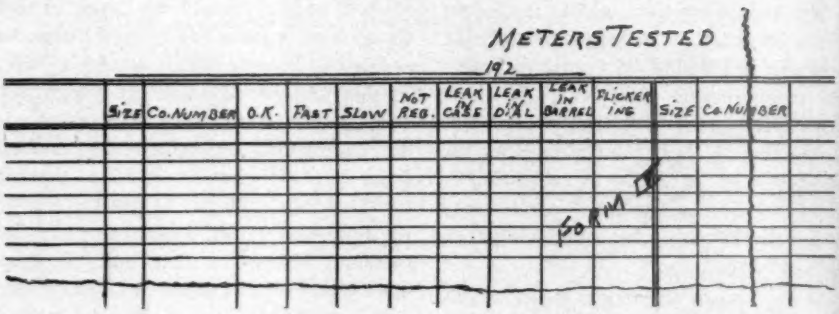
Routine and Request Tests

It has always been our custom to test meters at stated intervals determined by years of service and which now has been made compulsory in this state by law. Meters so ordered tested are termed "Routine Tests," and are designated by a salmon color test card. Meters ordered tested for all other reasons are termed "Request Tests" and are designated by a buff color test card. In order to determine which meters must be tested on routine tests we file our test cards numerically by month and year tested so that all meters that may be tested during this month (February, '21) are filed numerically into this suit. By this means we will be able should we desire to test these same meters four years hence, to determine at once which meters to test, as this unit would be intact except for such meters as may have been tested upon request tests and which are removed from this unit when so tested, so that all cards remaining in the unit at the end of the four year period would represent the meters to be tested at that time. To keep such a record it is necessary, for proper reference, to have a record of the date of the last test. We keep this in book form, which shows a record of all meters arranged numerically and as meters are tested, the month and year, is stamped opposite the number of the meter with a rubber stamp (Feb. 21).

Test record cards as they are received daily from the shops are turned over to the test record clerk who assorts them numerically and enters them in the test record, showing the date of test by means of a small rubber stamp, making the same impression on the test card. At the same time the date last tested as recorded by the test record, is noted on the card. From this the previous date of the test is obtained and the previous test card is taken from the test record file and the new test card is then filed into the proper unit numerically.

We keep two supplementary files to show "Meters Ordered Tested" and "Meters Holding at Shop." As meters are





ordered tested for routine tests we remove the cards from their regular unit and place them in a file termed "Meters Ordered Tested," this being done to have a record of the test orders issued. From the record of "Meters Tested," as sent us from the shop we remove the cards from the respective units or the "Meters Ordered Tested" file and place them in a file called "Meters Holding at Shop." Old test cards as they are removed from the current file are filed numerically in "Out of Use Files" and as old test cards having the same number are filed together this file gives us a complete history of each meter.

(*Continued from page 218*)

protect member companies from the introduction of unfavorable schedules, if nothing else should be accomplished; but many other things could well be undertaken. This is but one aspect of a broad problem.

It must be remembered that Underwriters all over the country are working in close cooperation, always with the interest of the insurance business as a whole in mind, so that it behooves the insuring public to be on the alert at all times, not only to improve conditions, but to see that they are not deprived of the advantages which they at present enjoy, or fail to receive any allowances to which their fire record properly entitles them.

You and the Boss

Remember that the boss has much to do, and many things to think of. He hired you. You may be the whole show. But who guarantees the "gate?"

There's just one man can keep raising your pay. Look him square in the eyes and ask him about it—when you shave.

Whose job are you after—the man ahead of you or the one behind? Look out! You may get it.

You're always in business for yourself. It might pay you to give the Boss a bargain now and then.—*People's Gas Club News.*

ADVERTISING SECTION

M. C. ROBBINS, Chairman — A. A. HIGGINS, Vice-Chairman

CHARLES W. PERSON, Secretary

MANAGING COMMITTEE — 1921

At Large

CLARK, WM. J., Mt. Vernon, N. Y.
ELSMAN, RALPH, Brooklyn, N. Y.
HANLAN, JAMES P., Newark, N. J.
MULLANEY, B. J., Chicago, Ill.
MACSWEENEY, JOSEPH P., Rochester, N. Y.
PETTENGILL, ANDREW F., JR., Cambridge, Mass.
WAGNER, F. H., Baltimore, Md.
WARNER, GEO. H., New York, N. Y.
WELSH, WILLIAM J., Stapleton, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
CARRAWAY, LEAKE, Norfolk, Va. (Southern)
CHAPIN, C. H. B., New York, N. Y. (Empire State Gas & Electric Association)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
GOULD, WM., Boston, Mass. (N. E. Gas Eng.)
HARTOG, JOHN H., Portland, Ore. (Pacific Coast)
JASPERSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
MARTIN, E. H., Des Moines, Ia. (Iowa District)
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)

Truths About the Meter

What They Think About the Meter at the Nation's Capital.

IF YOU were to visit the United States Patent Office at Washington, D. C., and ask the attendant to tell you something about the gas meter that is in millions of American homes, you would be surprised to hear what he had to say about this interesting instrument.

In the first place, he would tell you that the meter in your home to-day is constructed on practically the same principles as the first meter used by the gas company in London in 1844. He would tell you that while hundreds of inventors have tried to get something different and better, they have succeeded in improving on details only and that success has been attained only by following the original mechanical principles adopted more than 75 years ago for the correct measurement of gas.

If you were interested further in the subject, the attendant would direct you to the Bureau of Standards. Here you would meet some of the ablest scientists in the country, and if you had an hour to spare they would not only show you how the meter operates and how it is adjusted and tested for accuracy before it is set in your home or place of business, but they would show you how it compares with other instruments in giving honest measurement.

For instance, they would show you the famous standard 36-inch yard stick and many other measuring de-

In response to frequent requests from our member companies, we have prepared and present here in text and picture form a booklet on the meter which is now ready for distribution to companies and through them to their consumers.

In size, the booklet is 3½ inches wide by 6¼ inches long and consists of 16 pages. Below the illustration on the title page is a space reserved for the imprinting of the company's name.

We will be glad to furnish a sample copy to anyone interested. Company members who have not received their sample copies and order blanks by this time, should communicate with us at once.

vices which are absolutely correct. Then you would be shown other devices such as baskets and cans with false bottoms, dishonest weights, scales, etc., which have been taken away from merchants, many of whom were sent to jail when their cheating practices were discovered.

Survival of the Fittest.

After comparing these dishonest instruments with the gas meter, which must pass very strict tests before it is used, you would look upon your gas company as your friend for placing a measuring device in your home or store which has met the searching requirements of the country's best engineers and scientists for nearly a century and which stands to-day as the survival of the fittest.

Not only that, but you would appreciate the fact that unlike any other firm with which you deal, except the water and electric light company, your gas company sets a meter in your premises so that you can check the amount of your purchase of gas and thus keep track of any increase or decrease in the use of this necessity.

Now, everybody can't go to Washington to find out whether the meter is as accurate as it is claimed to be, and it isn't necessary. For if you will read your meter index, you can satisfy yourself every day that the meter is an open book in which your account with the gas company is kept and that you are getting what you pay for, dollar for dollar.

How to Read Your Meter.

People who read their meters—thousands of householders do it— are not only convinced that they are getting a square deal from the company, but they are constantly talking about how accurate their meters are and wishing they could measure their other purchases—coal, for instance—in the same way and thus keep check on what they spend each month.

You too, can read your meter. It is a simple and easy thing to do if you follow these instructions.

In the illustration above, the small dial at the top is used only in tests and is not considered when the reading of the meter is taken. The three lower and larger dials marked respectively 100,000, 10,000 and 1,000 denote the number of cubic feet recorded by a complete revolution of the respective hands. The hands are operated by gears and move in the same direction as the figures count; the one on the

left like the hands of a clock; the center one goes in the opposite direction; and the one on the right, also like the hands of a clock.

When you begin to use gas, all hands start to move. The mechanism is so arranged that each dial, beginning with the one on the right, adds its movement to the others, in such a way that each one records the number of revolutions of the dial on the right of it.

Now you can read the index shown above. To do this, be sure to put down the smaller of the two figures between which the hand on each dial stands. For instance, if the hand is between the figures two and three, put down two; if between eight and nine, put down eight; if between five and six, put down five. In the illustration above the reading is:

"1 thousand" or right hand dial	400 cu. ft.
"10 thousand" or center dial	6,000 cu. ft.
"100 thousand" or left hand dial	70,000 cu. ft.
Complete reading of meter	76,400 cu. ft.

(*Meter index to be shown here*)

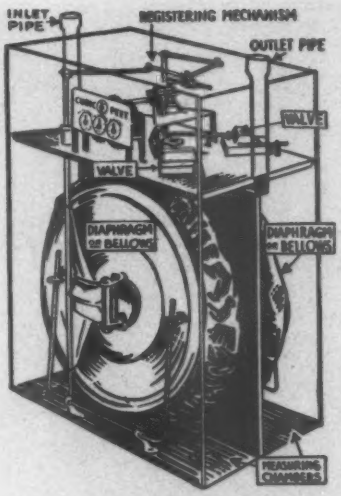
The reading of the meter index above is as follows:

"1 thousand" or right hand dial	600 cu. ft.
"10 thousand" or center dial	8,000 cu. ft.
"100 thousand" or left hand dial	30,000 cu. ft.
Complete reading of meter	38,600 cu. ft.

To check the result, read the meter again, but read from left to right, thus: three—eight—six = 38,600 cubic feet. This is probably the way the representative of your gas company will read it.

Looking Inside the Meter.

This is how your meter would appear if the sides, top and bottom of the meter



SKELETON OF A GAS-METER

casing were removed. In the upper part is the registering mechanism; and in the lower part, the measuring chambers, consisting of two diaphragms or bellows. To understand how the meter operates, think of the bellows as human lungs. The bellows are of leather, and they inhale and exhale gas just as the human lungs take in and send out air, except that the bellows work one after the other; that is, when one is inhaling or taking in gas from the mains in the street, the other is exhaling gas into your house pipes.

By means of levers attached to the bellows, each inhaling and exhaling movement is registered and translated into cubic feet on the index, which is a simple piece of clock work by which the gas passing through the meter is recorded. The registering mechanism and the dial hands in the upper part of the meter cannot move unless the bellows move. Likewise, the bellows cannot move unless

gas passes through them and makes them inhale and exhale.

We have told you how careful the authorities in Washington are to see that all measuring instruments come up to certain rigid standards for your protection, and how highly they regard the gas meter and its record of accuracy. Now we will tell you about the other precautions that are taken by your gas company, and your city and state officials to make sure that the meter is accurate.

Tested—Proved—Certified.

First, before a meter is set in your premises it is thoroughly tested and proved for correct registration by your gas company, or, in certain sections of the country, by meter inspectors employed by the city or state. These inspectors are your trusted representatives and after they have put the meters through a careful examination and have found them to be correct, they place an official seal upon them, thus certifying to their accuracy. If a meter is incorrect, the inspector sends it back to the company and it must be made correct before he will put his seal on it.

It is also the custom of gas companies to inspect meters regularly and so keep them in good condition. Companies then know that the meters are correct, both in your interest and theirs.

A record is kept of the test of each meter and since each meter is numbered, its reputation for accuracy can be easily verified in the records of your gas company or city or state meter inspectors anywhere in the United States or throughout the world. These records are open to you at any time.

The Meter Always Remembers.

You will be interested to know that gas companies do not make their own meters, but generally purchase them from unprejudiced manufacturers who are proud

of their product and want it to give satisfaction.

Another interesting fact is that the meter always delivers gas to you when called upon and does not forget to record it. Very few people remember how many lights have been burned or how long a gas stove or water heater has been used during a month, but the meter remembers!

For this reason, it is well for you to know how to get the most out of the gas you use so that your gas bills will be thrift bills and you will never have occasion to doubt the truthfulness of your meter. After all, wasting gas is burning money and your gas company does not want you to do either. This is because waste of gas means big bills, complaints, investigations, re-checking, letter writing, delayed payments and other expenses; and worst of all, it means dissatisfied customers. Satisfied customers are worth more to your company than any revenue derived from wasted gas.

How to Reduce Your Gas Bills.

Don't use the giant burner on your gas range when a smaller burner will do.

Don't light burners on your gas range until you have food all ready to go on the fire.

Don't allow a burner to remain lighted without being in use.

Don't purchase from strangers so-called gas-saving devices without first asking your company whether they are of value.

Don't use the gas oven to heat the kitchen.

Don't heat a kettle full of water when you only want a quart.

Don't use the ovens of your gas range for storage of food. This rusts the oven.

Don't keep a full flame under container when water has reached the boiling point. Turn down the flame or set utensil over small simmer burner.

Don't turn off cock part way at meter. This does not save gas; it lessens the pressure and interferes with good service.

Don't expect to use gas efficiently in an old worn-out range, or one with burners out of adjustment.

Don't use the burners if they pop or make a noise on lighting. Have your gas company adjust them.

Follow These Instructions.

Whenever possible, use the smaller size burners instead of the large ones.

Remember gas is not hotter ten minutes after the burner is lighted than it is the instant the burner is lighted.

Turn out the gas and relight it again in event there is an interval when it is not needed. Matches are cheaper than gas.

Keep burners of gas range clean by washing them in boiling water and soda at least once a month and have them dry before using. This will save gas.

Use the gas oven to its fullest capacity on baking days. Plan to have a baked dinner when you bake.

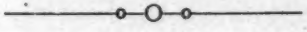
Use triple saucepans set over one burner. You can cook three vegetables for the cost of cooking one. Ordinary saucepans will cook only one vegetable at a time. The average gas consumption of burners on standard ranges is as follows:

	Cubic feet per hour
Broilers	50
Oven burners	40
Giant burners	20
Medium burners	15
Simmer or smallest burners	5

The amount of your gas bill can be reduced by using smaller burners more frequently.

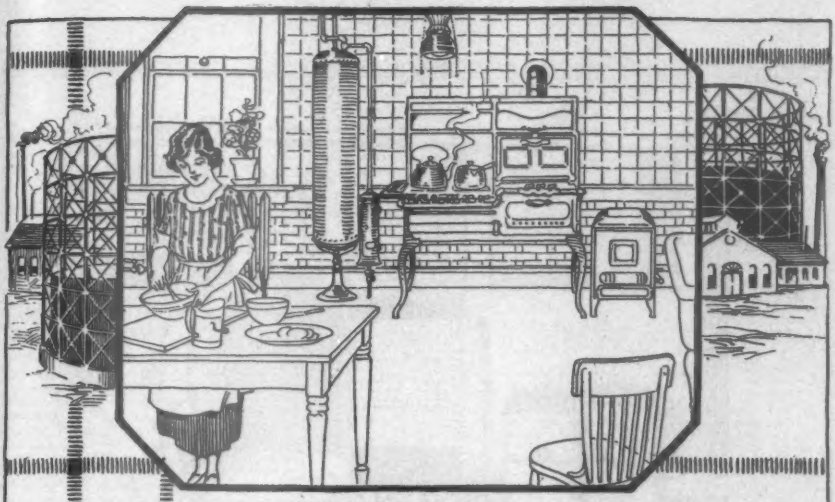
A long, yellow, smoky flame is very wasteful. A small, blue flame is much hotter and requires less gas. If your burners give a yellow flame, have your company adjust them.

If you are having trouble with your appliances or with your service, kindly remember that your gas company is the proper place to register complaints. It is always ready to help you.



To Present Illustrated Lectures on Industrial Fuel Sales at Pennsylvania and Iowa State Gas Association Meetings

An illustrated lecture on "The Value to the Gas Company of Its Industrial Fuel Business and Ways and Means for Securing and Retaining This Class of Business," will be given by Mr. W. A. Ehlers, of the American Gas Association Headquarters Staff at the coming conventions of the Pennsylvania and New Jersey State Gas Associations and the Iowa District Gas Association meetings in April.



An "All Gas" Kitchen

No Middleman in the Gas Business

You buy a simple article and the price makes you gasp. "Who's getting the big profit?" you ask. "I'm not," replies the retailer, and he points to the wholesaler; the wholesaler to the jobber; the jobber to the manufacturer, and the manufacturer to the laborer.

The same old chain, with a profit on every link. Is all business like that? Must we pay two, three or four profits on everything we buy?

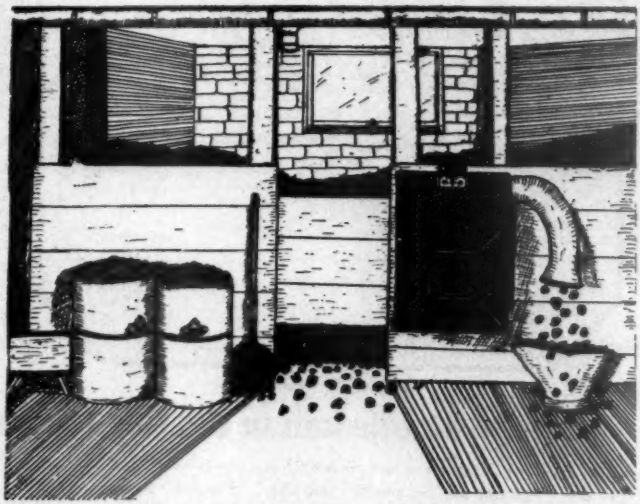
No indeed. Here is your gas company selling you *service;* delivering gas direct from the plant, right to the point of use in your home, without middlemen or middlemen's profits, and with every item of its cost regulated by your trusted representatives.

While merchants think nothing of making profits of from 20% to 50%, we are allowed to make but one profit. And seldom does it exceed 8% on the money actually invested. Frequently it is less.

What other business renders so complete a service at so small a return?

MEMBER OF THE AMERICAN GAS ASSOCIATION

Twelfth of a series of twelve "good will" advertisements now being prepared for member companies. Price of series complete with matrices in either three or four-column newspaper width, $36.00. Price of three-column electrotypes, $48.00. Orders for single advertisements accepted at $3.00 per matrix and $4.00 per electrotype.



SUPPOSE

You had a "COAL METER" in your cellar and received a monthly coal bill for the coal used each month.

You would then know that it cost you more to cook with coal than it does to

COOK WITH GAS

Save this money and avoid the dirt and drudgery of carrying coal, ashes and kindling.

THE GAS WAY IS THE RIGHT WAY

PLYMOUTH GAS LIGHT CO.

CHAS. OTTEN, JR., Manager.

A powerful argument against coal, made doubly effective because of its simplicity of illustration and brevity of text. Incidentally, the advertisement says a good word for the meter, in that it points out the fact that the meter enables one to check up on the use of a commodity.

COMMERCIAL SECTION

H. S. SCHUTT, Chairman — A. P. POST, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE — 1921

At Large

ABBOTT, M. E., Taunton, Mass.
BARNES, CYRUS, Boston, Mass.
BARNITZ, F. R., New York, N. Y.
BARTHOLD, WM. H., New York, N. Y.
BENNITT, GEO. E., New York, N. Y.
DAVIES, J. E., Chicago, Ill.
GASTON, LUTHER, Lebanon, Pa.
GOULD, WM., Boston, Mass.
HEWITT, ARTHUR, Toronto, Ont., Can.
JELLIFFE, C. N., New York, N. Y.
KAHN, A. M., Hamilton, Ohio
LEARNED, J. G., Chicago, Ill.
LEMKE, FRANK, Kalamazoo, Mich.
LOEBELL, HENRY O., New York, N. Y.
LONG, H. B., New Brunswick, N. J.
MYERS, J. B., Philadelphia, Pa.
POST, A. P., Philadelphia, Pa.
RUTLEDGE, F. J., Philadelphia, Pa.
SCHUTT, H. S., Philadelphia, Pa.
SHERWOOD, J. M., New York, N. Y.
SMITH, CHAS. S., Philadelphia, Pa.
STEPHANY, E. J., Pittsburgh, Pa.
YOUNG, R. R., Newark, N. J.

Representing Affiliated Societies

BORDEN, A. W., Hastings, Neb. (Iowa Dist.)
BURKE, E. J., Indianapolis, Ind. (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Mich.)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
CLARK, H. H., Chicago, Ill. (Illinois)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
FLAUTT, J. J., New Orleans, La. (South Central)
CRANKSHAW, J. WARD, Allentown, Pa. (Pennsylvania)
HANLAN, J. F., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Ont. (Canadian)
McARDLE, JAS., Macon, Ga. (Southern)
ST. JOHN, JOHN, Madison, Wis. (Wisconsin)
WEISS, FRANK, Los Angeles, Cal. (Pacific Coast)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Gas Lighting—F. R. BARNITZ, New York, N. Y.
Heating—GEO. E. BENNITT, New York, N. Y.
Industrial Fuel Sales—HENRY O. LOEBELL, New York, N. Y.
Industrial Fuel Contracts (Sub.) — CHAS. S. SMITH Philadelphia, Pa.
Customer Service—J. B. Myers, Philadelphia, Pa.
Merchandising—H. B. LONG, New Brunswick, N. J.

Plan and Result of Campaign on Gas Ranges

Conducted by

Consolidated Gas, Electric Light & Power Company of Baltimore.

B. A. DUVALL, Member of the Sales Campaign Committee

Our campaigns are conducted during stated periods for the reason that they lose their effectiveness if continued too long.

Sales on ranges were exceptionally active during the campaign and have continued so since the termination of the Special Sale, which shows that such activities have no after depreciative effect on sales, and this fact has been noted after each of our campaigns.

The campaign was carefully planned before the start and all the departments and sales people were ready for a large increase in business, and their expectations were realized.

While the terms apparently were spread over quite a number of months, yet our well organized sales force was instructed to shorten these terms, and secure advance payments when possible, and this was done to a very large extent.

Approximately 40 per cent. of sales were for time not exceeding fifteen months and a number were for cash or thirty days where the customer enjoyed the 6 per cent. discount for cash. The sales people featured this thirty days less 6 per cent. discount proposition in their sales talk, with very good results.

Greater publicity could have been given to the campaign, if we deemed it necessary, but stock of ranges had to be watched closely in order not to over sell. We are all aware of the difficulties encountered at this time in obtaining appliances. This additional publicity would have been as follows:

1—Folders to be delivered with service bills.
2—Signs on all Company trucks, wagons and service carts.
3—Personal letters to customers.

(Farther on you will find a photograph of one of our window displays of ranges during the campaign.)

In the method of handling the sale, the sales ticket and credit issued in proper form will speak for themselves.

See photograph of a few ranges returned. These ranges can all be practically rebuilt. The ones which we could only junk were disposed of before a photograph could be taken. The junked ranges were in a very dilapidated condition and one would wonder how cooking could be done on such ranges.

The removal of these old ranges from our lines will mean quite an item of saving in the Complaint and Service Departments, as the cost of servicing such worn out appliances can not be estimated. All companies should use every effort to have them removed from their lines for the betterment of service. The customers, you know, usually blame the gas when they make their complaints and not the appliances.

The result of the campaign was very gratifying and such campaigns we expect to institute from time to time. Any campaign carefully planned and executed is found to show a large return in sales and a betterment in service.

(310)-16432-12-19 Mdse Dept. ORIGINAL, (For office)

Consolidated Gas Electric Light & Power Co. of Baltimore

No._____

Date Issued 191 by Information form Led.

Name Folio

Address

Item

Qty.	Description of material or condition warranting credit	@	Amt. of credit
	Total credit		

Recover material as directed above
To Driver or Workman—Call for material on 191
To Office—Accept return of material herewith

The material described above has been received in stock by me this day in connection with this ticket, and found in good condition, except the following:

Signed Date 191

This credit approved by Date 191

CHARGE Acct. No.			CREDIT Acct. No.		
" "			" "		

Refund by { Petty Cash / Petty Check / Voucher Check $ } Charge ¢ Signed

Credit Form

Form (1116)-16373-9-19

Consolidated Gas Electric Light & Power Co. of Baltimore

(193) MERCHANDISE DEP'T

1246-25	Date order taken	Acct. No.

Section	Handbook	Ledger	Folio	Date reported for billing

Charge Account of

Charge to Address

Deliver Name

Deliver or Work Address

Near

When goods are to be charged to same address as delivered use charge space only

Distance to appliance.....ft.	Pipe allowance.....ft.	Pipe Service	In	App.
		Meter	In	App.

Amt of sale.	Rec'd on acct.	On next bill	New-old-non. C Bi-weekly Monthly Payments $
$.....	$.....	$.....	

Sales Location	Sales Person	Cash	Charge	Lease	C. O. D.

INSTALLATIONS

Qty.	Dept.	Cp.w.	C	Ft Af	Artic'e	Repl.	@		
								Total	

1246-25	Cashier's stamp
Credit O. K.	Subject to conditions on reverse side Signature By

Section	Handbook	Ledger	Folio	A/C No.	Date

Credit Account of

Credit to Address

Delivered to

Near

New-old Non. C. Bi-weekly Monthly

Cash Charge Lease C.O.D. Phone

1246-25	AUDITOR'S VOUCHER	Sold by
Amount received		Amount of Sale $
Re. A/C $	By	

AGREEMENT

The title to property so sold on the deferred payment plan shall remain in the Company until full purchase price is paid.

Monthly payments on account of the purchase price shall be due and payable with current monthly gas or electric bill rendered to the purchaser.

Should the purchaser fail to make any monthly payment or cease to be a gas or electric consumer of the Company all the remaining installments shall, at the option of the Company, immediately become due and payable.

In default of payment of purchase price, or any installment, the Company may reclaim and take possession of the property wherever the same may be found.

TUNGSTOLIERS

It is understood and agreed that the Consolidated Gas, Electric Light & Power Co. of Baltimore shall in no event be liable for the maintenance of any electric wiring or equipment except under special agreement. The Company shall in no event be responsible for consequential damage.

If more than.....feet of pipe is required for installation of.....on.....floor, a charge of $.....per foot will be made for each additional foot of pipe. The usual charge of $.....per floor will be made for connections above first floor.

Order Rec'd .....
Sent to Credit Dep't.....
Ret'd from " .....
Fw'd to Shop.....

Salesman's Remarks:—
Using service this address.....
" " before at.....

	Month	Date	Year
Rec'd Credit Dep't			
Account opened			
Discounts lost			
Average bills			
Mdse. purchased			
Mdse. owing			
Cut out for N. P.			
Special acc't			
Remarks			

(Reverse side)

Sales Forms Used in Campaign

(A) Duration of Campaign:

The campaign was started on March 8th and continued up to and including April 30th, 1920.

(B) Plan of Campaign:

Ranges were sold at the regular retail prices and purchasers were allowed ten dollars ($10.00) for the return of their old gas ranges, provided they were in use and had two ovens (one for baking and one for broiling). The condition of the range was not to be considered. The old range had to be disconnected and returned at the time the new range was installed.

(C) Terms:

Cash or thirty days, less 6 per cent.

Deferred payments—no money to be paid at the time of purchase and from eighteen to twenty-four monthly payments depending on the price of the range.

Ranges up to $50.00—
Eighteen monthly payments.
Ranges up to $100.00—
Twenty monthly payments.
Ranges over $100.00—
Twenty-four monthly payments.

(D) Publicity:

One-half page advertisements in Sunday papers during the campaign.

Small advertisements in daily papers during the campaign.

Solicitation by the District Salesmen.

Window displays.

(E) Method of Handling the Sale:

Orders were taken on our regular sales ticket showing the type and selling price of the range sold, reference being made on the sales ticket (for shop information) "see recovery ticket for old range."

Recovery or credit ticket was made out to recover old range and credit ten dollars ($10.00). Reference was also made on this to see order for new range. The

Sold as Junk

two tickets were attached and sent through to the Installation Department for execution and upon completion were returned to the Merchandise General Office as one transaction.

(F) Disposition of Old Ranges Returned:

The old ranges were returned to the storeroom, and after careful inspection separated into two groups:

(a) Those that were fit only for junk.
(b) Those that could be cleaned and rebuilt without great expense.

The ranges for junk were stripped of usable parts (to be used as repair parts) and sold immediately to a junk company, in order to clear the storeroom, and the ones in fairly good shape were passed on to the Repair Department.

(G) Distribution of Allowances on Ranges:

One-fourth to the Service Department.

One-fourth to the Operating Expense of the Merchandise Department.

One-half to Advertising.

(H) Result of Campaign:

Ranges sold	3,772	
Ranges returned	1,336	
Ret'd ranges junked..	1,033	
Ret'd ranges rebuilt..	303	
Allowances to customers on ranges returned		$13,360.00
Estimated amount received from junk companies..	$1,033.00	
Estimated receipt from sale of rebuilt ranges at average price of $40.00 each	12,120.00	$13,153.00

Industrial Fuel Sales and Service

WHAT Do They Mean To You? Some time ago an industrial engineer called on a firm of machinists in a large industrial centre ostensibly for the purpose of stimulating a greater interest in gas as a fuel and increasing its use in the shop.

After the first few minutes of conversation it became very apparent to the engineer that the head of the firm was not very friendly with the local gas company. He was reluctant to give even sufficient time to talk matters over. The incident, however, led to a careful examination into the reason for his attitude since it was obvious that there could be no new business negotiated under the existing feeling. He related how he had been persuaded by a salesman from the gas company to purchase a group of three blue-flame atmospheric jet burners for the purpose of hardening lathe cutters made of high speed steel. Needless to say, he had no success and he had been persuaded to purchase something that was of no value for the purpose intended.

The engineer offered to correct the error by removing the burners and allowing him a proper credit. He also recommended the proper type of equipment to use, and even went so far as to give the machinist a practical demonstration of the utility of the equipment he had thus suggested. This little experience transformed a pessimist into an optimist and made a new friend for the gas company. It was accomplished in a very simple way—giving a real service.

There is a feeling on the part of some men in the gas industry that a large portion of the industrial fuel business secured during the recent period of high fuel prices is going to be lost when these prices are lowered. This may be true to some extent but in a large measure it depends upon the equipment installed and the degree of interest on the part of the gas company in maintaining a proper service. It is short-sighted policy to lose interest in your industrial consumer after you have sold him equipment he could use to burn gas. Remember the consumption of gas goes on from day to day and it was for this purpose that you concentrated your efforts on selling equipment. Moreover, it is just as important to hold old business as it is to procure new. With proper equipment and adequate service there is less danger of losing industrial consumers during a period of falling prices.

Now is the time to redouble our efforts in not only securing new industrial consumers but also in holding those we now have. In keeping with this policy several companies have called in our Mr. Ehlers for consultation in the matter of new uses for gas, a survey of industrial territory for prospective business and an examination into service conditions.

Mr. Ehlers has spent several days recently with the Cambridge (Mass.) Gas Light Company, the Wilmington (Del.) Gas Company and the Adirondack Power and Light Company, Oneida, N. Y.

The attitude of regulatory bodies in a majority of recent decisions gives evidence to the feeling of a square deal for the gas company in the matter of fixing a rate which will be fair and under which a company may earn a reasonable return on its investment. Thus there seems now to appear a silver lining to the dark clouds which have hung low over the utilities during the past few years.

MANUFACTURERS SECTION

GEO. S. BARROWS, Chairman — JOHN S. DeHART, Jr., Vice-Chairman

W. W. BARNES, Secretary

MANAGING COMMITTEE — 1921

At Large

BARNES, W. W., New York, N. Y.
BARROWS, GEORGE S., Providence, R. I.
BRUCE, HOWARD, Baltimore, Md.
CONROY, J. P., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, J. S., JR., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
KOPFER, W. B., Brooklyn, N. Y.
KNAPP, F. H., Pittsburgh, Pa.
LEMKE, F. A., Kalamazoo, Mich.
LOHMEYER, H. B., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MCDONALD, DONALD, New York, N. Y.
MUELLER, ROBERT, Decatur, Ill.
NORTON, H. A., Boston, Mass.
ROPER, GEORGE D., Rockford, Ill.
SHERWOOD, J. M., New York, N. Y.
STITES, TOWNSEND, Gloucester, N. J.

Representing Affiliated Societies

BABCOCK, C. B., San Francisco, Calif. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
BREWER, E. D., Atlanta, Ga. (Southern)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
LONG, H. J., New Brunswick, N. J. (New Jersey)
MCCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
SEIDENGLANZ, C. H., Dallas, Tex. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Membership—GEORGE W. PARKER, St. Louis, Mo.
Apparatus Makers—D. J. COLLINS, Philadelphia, Pa.
Nomination—
Exhibition—W. W. BARNES, *ex-officio*, New York, N. Y.
Illustrated Lectures—GEORGE S. BARROWS.
Division of Meter Manufacturers—DONALD MCDONALD, Chairman, W. P. HUTCHINSON, Vice-Chairman
Division of Gas Range Manufacturers—WM. M. CRANE, Chairman, I. W. PEFFLY, Vice-Chairman.
Division of Water Heater Manufacturers—H. J. LONG, Chairman
Divison of Office Labor Saving Devices Manufacturers—H. B. LOHMEYER, Chairman, E. J. FERRIS, Vice-Chairman
Division of Heating Appliance Manufacturers—J. P. CONROY, Chairman
Division of Industrial Appliance Manufacturers—WM. B. KOPFER, Chairman
Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Chairman
Division of Apparatus & Works Manufacturers—J. S. DEHART, JR., Chairman
Division of Supply Manufacturers—R. MUELLER, Temporary Chairman
Division of Accessories Manufacturers—J. M. SHERWOOD, Temporary Chairman

Membership Campaign

THE Membership Committee of the Manufacturers Section under the chairmanship of Mr. George W. Parker, is making a very intensive campaign to interest in company membership in this Association all of those engaged in supplying the needs of the industry.

It is only by the cooperation of the units of an industry that its strength and prestige are felt.

Some years ago before those interested in the manufacturing field of the industry were recognized, it was often intimated that a trade association would be a desirable thing and the ground work for such an association was in the course of preparation when through the invitation of Percy S. Young then president of the National Commercial Gas Association, a conference was held whereby an invitation was extended to its promoters to join that Association as a Manufacturers Section. To the promoters of the proposed trade association the desirability of

such recognition was so apparent that the Manufacturers Section was formed. On the amalgamation of the National Commercial Gas Association and the American Gas Institute, recognition was again given to the manufacturers engaged in that side of the industry by the designation of a Manufacturers Section in the new American Gas Association.

At the time this Association was formed there were some 40 manufacturer companies in membership and that number has steadily increased to a membership of 211 companies who appreciate the collective judgment of manufacturers in an industry.

In seeking new members the question has been asked, "What's the use?" As an answer to that question we quote from one who wants to be enlightened and another who answers the question.

The member asking "What's the use," states "As a matter of fact it is questionable whether we consider our membership in the Manufacturers Section as worthwhile. While we are listed in the Classified Directory of the MONTHLY we have never received a single inquiry for any of our products. Always aiding in the Association's support does not awaken any tendency towards reciprocity, therefore, the old question, "What's the use?"

The Answer.

As manufacturers supplying electrical equipment in a very small way to the gas industry we were somewhat reluctant in accepting an invitation to affiliate with the American Gas Association as a company member.

We have been convinced that our decision to affiliate was a very wise one. The personal contact we have been able to gain by being exhibitors at the two recent exhibitions of your Association has repaid us 100 times over in making friends and bringing our product before the gas industry which would not have been obtained in any other way except by a great deal of time and the incidental expenses pertaining to travel, etc.

We have entered into the spirit of Association work which was helpful to us and we felt that as a company member when asked the question, "What's the use in joining any association," our answer is, "You get what you give."

It has been our privilege to join with your chairman in committee work, which work has been indeed interesting to us and has given us an acquaintance in the trade which would not have otherwise been gained. We feel that the American Gas Association should be the standard bearer of the industry, not only for utility companies themselves but for all of those manufacturers who are supplying the needs of the industry and are enjoying the fruits of the revenue therefrom.

We feel that a manufacturer who is a company member of the American Gas Association has an endorsement which is second to none as to their standing in the trade.

Our prosperity is dependent upon the prosperity of those producing the gas utilized by our appliances—our interests are in common.

A Pioneer in the Gas Appliance Industry

WE hear a lot about optimism these days and the necessity of a healthy business perspective in pursuing our daily tasks. But what are our petty problems compared with those that were faced and solved so intrepidly by the early trail blazers in the gas appliance business?

We are thinking of Joseph Howard Phillips of Cincinnatio, Ohio. He was one of the earliest and most successful leaders in the gas appliance field at a time when a man had to combine the ingenuity of the inventor with the astuteness of the merchant to win a way for himself. No history of the appliance business would be complete if his share in its development were not recorded. Mr. Phillips put a product on the market which proved an influence in the field and in its manufacture he solved the many perplexing technical problems that are always associated with a new undertaking. He was essentially an inventor; moreover, he had vision which perceived the future possibilities of the appliance business.

Of Mr. Phillips' early life and business experiences we are indebted to his widow for the following information. Born in Cincinnati in 1844, Mr. Phillips was educated in the public schools of that city and later joined his father in the surveying and engineering business of which Andrew Hickenlooper, who later became president of the Cincinnati Gas Company, was a member. All the old reliable surveys in and around Cincinnati were made by this firm.

Later in partnership with his father, Mr. Phillips manufactured the Phillips gas meter. As gas began to be used more and more as fuel, he saw a field for his inventiveness and placed on the market his gas stoves, following them with radiators, water heaters and many other appliances. The Phillips Gas Stove Works was the pioneer in the gas stove industry in Cincinnati and he remained in this business until his retirement.

On November 25, 1920, he died suddenly of heart trouble.

James P. Conroy

The many friends of Mr. James P. Conroy will be surprised to learn that he has resigned from the General Gas Light Company with whom he has been associated actively for the past twenty years. In Mr. Conroy's change of endeavor we wish for him every success. At the present time we understand that no definite arrangements have been made by him as to what his future plans are but the trade will no doubt be advised as soon as they are consummated.

Mr. Conroy will continue as chairman of the Division of Heating Appliance Manufacturers of the Manufacturers' Section to which he has always given his earnest support.

Business is Business

"Business is Business," the Little Man said,
"A battle where 'everything goes,'
Where the only gospel is 'get ahead,'
And never spare friends or foes,
'Slay or be slain,' is the slogan cold,
You must struggle and slash and tear,
For Business is Business, a fight for gold,
Where all that you do is fair!"

"Business is Business," the Big Man said,
"A battle to make of earth
A place to yield us more wine and bread
More pleasure and joy and mirth;
There are still some bandits and buccaneers
Who are jungle-bred beasts of trade,
But their number dwindles with passing years
And dead is the code they made!"

"Business is Business," the Big Man said,
"But it's something that's more, far more;
For it makes sweet gardens of deserts dead,
And cities it built now roar
Where once the deer and gray wolf ran
From the pioneer's swift advance;
Business is Magic that toils for man
Business is True Romance."

"And those who make it a ruthless fight
Have only themselves to blame
If they feel no whit of the keen delight
In playing the Bigger Game,
The game that calls on the heart and head,
The best of man's strength and nerve;
"Business is Business," the Big Man said,
"And that Business is to serve!"

—Berton Braley in *The Nation's Business.*

TECHNICAL SECTION

R. B. HARPER, Chairman — H. R. COOK, Jr., Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE — 1921

At Large

CHUBB, C. N., Davenport, Iowa
CLARK, JOHN A., Jr., Newark, N. J.
FORSTALL, WALTON, Philadelphia, Pa.
FULWEILER, W. H., Philadelphia, Pa.
LUNN, C. A., New York, N. Y.
MACBETH, G. T., Mt. Vernon, N. Y.
MEYERHERM, C. F., New York, N. Y.
MORHOUS, O. A., Astoria, N. Y.
NORMAN, O. E., Chicago, Ill.
TUTWILER, C. C., West Conshohocken, Pa.
VINCENT, G. I., Syracuse, N. Y.
WARNER, A. W., Chester, Pa.
WEBER, F. C., New York, N. Y.
WHITE, PROF. A. H., Ann Arbor, Mich.
WILLIEN, L. J., Boston, Mass.

Representing Affiliated Societies

AUSTIN, E. E., Sumter, S. C. (Southern Gas)
BROWN, J. A., Jackson, Mich. (Michigan)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E.)
CHUBB, C. N., Davenport, Ia. (Iowa)
CORNISH, R. C., Philadelphia, Pa. (Pennsylvania)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canadian)
JONES, JACOB B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wis. (Wisconsin)
NEAL, GEO. A., Hammond, Ind. (Indiana)
PAIGE, C. E., Worcester, Mass. (N. E. Gas Eng.)
PAPST, H. M., Portland, Ore. (Pacific Coast Gas)
SEDBERRY, W. H., Marshall, Tex. (South Central)

CHAIRMAN OF SECTION COMMITTEES ORGANIZED TO DATE

Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
Chemical—C. A. LUNN, New York, N. Y.
Complete Gasification of Coal—A. W. WARNER, Chester, Pa.
Consumers Meters—JOHN A. CLARK, JR, New York, N. Y.
Electrolysis—CHAS. F. MEYERHERM, New York, N. Y.
Gas Coal Specifications—PROF. A. H. WHITE, Ann Arbor, Mich.
Gas Oil—W. H. FULWEILER, Philadelphia, Pa.
Improvement of Distribution Systems—C. N. CHUBB, Davenport, Ia.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.
Gas Pipe and Meter Deposits—O. A. MORHOUS Astoria, N. Y.
Purification—

Gas Chemists' Handbook---Revised Edition

TO OUR members who have been using in their laboratories the first edition of the Gas Chemists' Handbook, published in 1916, the announcement that the revised edition will be ready for distribution on or about May 1st needs no further comment.

For the benefit of those who have not familiarized themselves with the merits of the Handbook through actual use we would submit the following facts which warrant their careful consideration.

The first edition of the Handbook (1916—C. C. Tutwiler, Chairman) was the result of four years' standardization of laboratory methods by a committee representative of the best chemical talent in the industry.

About 800 copies of this book were sold to gas companies in the U. S., Canada and abroad—some companies ordering as many as eight copies for use in their laboratories after the first trial.

The Handbook is unique in its field. It is the only work covering all STANDARD methods applying particularly to gas companies, from the sampling and testing of raw materials to the finished products and by-products of gas manufacture, and includes tests of materials incidental to the business such as paints, lubricants, refractories, etc.

The first edition has now been carefully revised—this revision having received practically the exclusive consideration of the Chemical Committee for the past two years. In all twenty-nine chemists, representing gas companies, coke oven and by-product companies and several research bureaus of the Government, have contributed to the material presented therein.

The various methods added, with changes, corrections and additional tables, will increase the size of the original edition from 354 to about 525 pages and the new Handbook will be up-to-date and authoritative in every way.

The following chapter headings will give an idea of the scope of this work:

Chapter I, RAW MATERIALS—coal and coke, gas oil and purification materials. Chapter II, PRODUCTS OF GAS MANUFACTURE—illuminating gas, ammonia, light oils and light oil products, tar from water gas and coal gas, cyanogen. Chapter III, IMPURITIES IN GAS—hydrogen sulphide, ammonia and total sulphur, tar, naphthalene, carbon bisulphide and iron carbonyl. Chapter IV, MISCELLANEOUS—water, paint and paint materials, lubricants, solder, bearing metals, brass and bronze, pipe deposits, refractories, cement and lime, ferrous metals.

The Association realizes how essential it is that the methods of sampling and testing used in your laboratory shall be such as to insure absolute accuracy—that materials representing thousands of dollars are purchased on these analyses and your plant operation regulated according to the figures they show. We are also keenly conscious of the benefit to the industry from the general adoption of methods which will be *uniform* throughout the country and hope to see a Gas Chemists' Handbook in use in the laboratory of every company member.

As was the case with the first edition we anticipate there will be a large demand for this book from sources outside the industry. It will therefore be of great assistance in providing an ample edition of the new book if members will promptly advise Headquarters how many copies they will require. The price will be $6.00 postpaid, U. S. and Canada—$6.50 in foreign countries.

Good will, like a good name, is got through many actions and may be lost by one.—*The Keystone Press.*

Branch Connections from Existing Cast Iron Mains

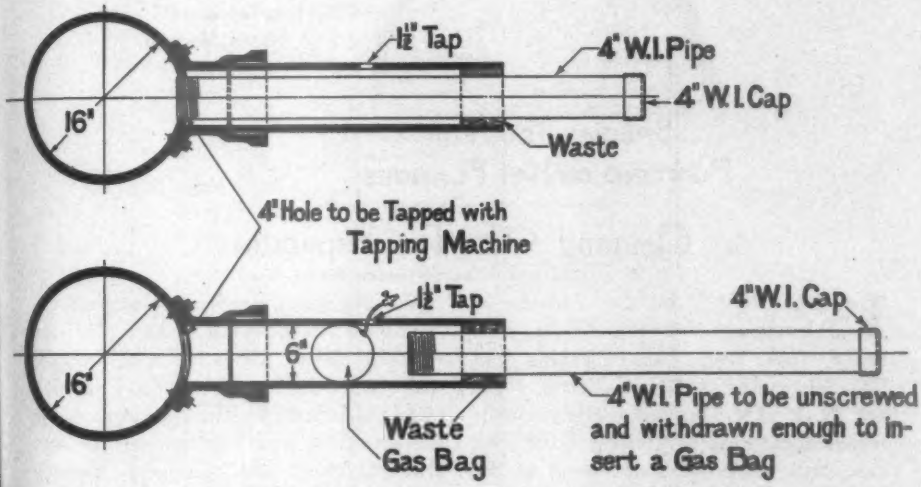
GEORGE BEADENKOPF, Consolidated Gas, Electric Light and Power Company, Baltimore, Md.

REFERRING to the article of Mr. H. B. Anderson on the subject of making branch connections from existing cast iron mains, the following is submitted:

Our method is to insert a T or cross in all cast iron mains from 4 to 10 inches inclusive; on cast iron mains from 12 to 20 inches inclusive use the Hub sleeve, except in some special case; on cast iron mains 24 inches and over we use flange bells or hat flanges.

requiring a large opening, say, from 8 to 12 inches for the outlet, we invariably in the same hole where the Hub sleeve is to be put on drill the main for stoppers and shut off the main so that a short piece can be placed in the outlet, after which we can use the stopper in it.

We never allow the piece that is out from the main where the Hub sleeve is placed to be driven inside the main; it is always removed. On the larger openings it is easy, as the main is stopped off; on

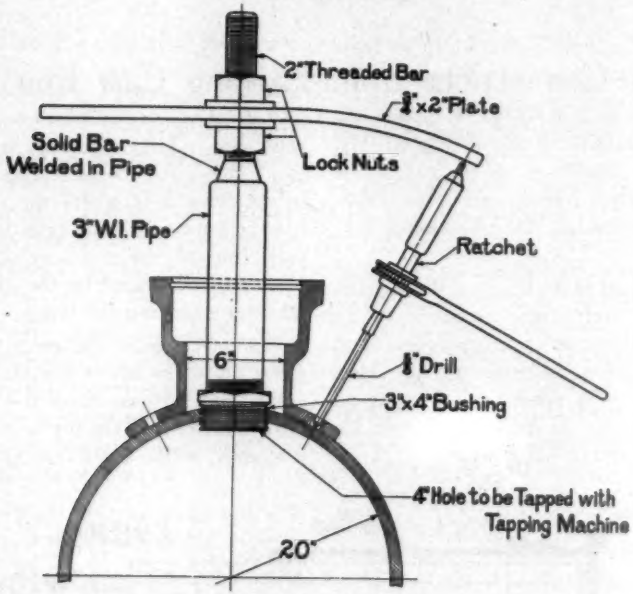


Method of Connecting Hat Flange to Main

Whenever it is possible on the smaller size mains, fittings are inserted as the main is laid.

Whenever it is necessary to place in the Hub sleeve on the larger size mains, small openings we drill and tap the hole instead of cutting the pipe.

Accompanying cuts show the special tools which are generally used for hat-flange and Hub sleeve.



SPECIAL TOOL FOR PUTTING ON HAT FLANGES.

Cleaning Out Tar Separators

O. W. ADAMS, Brockton Gas Light Company, Brockton, Mass.

I OBSERVE in the Association MONTHLY, Vol. III, No. 2, February, 1921, page 110, "Cleaning Out Tar Separators" by H. H. Ferris, Newark, N. J. I will submit another scheme which worked out very nicely in our own case, and which no doubt some of the craft may be glad to make use of.

We formed a basin in the yard adjacent to our water gas tar separator, by throwing up an embankment of coke breeze as a retainer for the sludge about to be deposited therein.

The embankment also acts as a filter, allowing the water to seep through, while the heavy sludge, tar, and oil remain within.

We use compressed air through a ¾-inch hose attached to a ¾-inch pipe, the opposite end of which has a ¾-inch tee made on at the branch outlet. The open end is circulated by the operator on the bottom of the separator between the several partitions and skimmers, thereby agitating, and putting in solution the sludge which is pumped out by a diaphragm pump, Edson pattern.

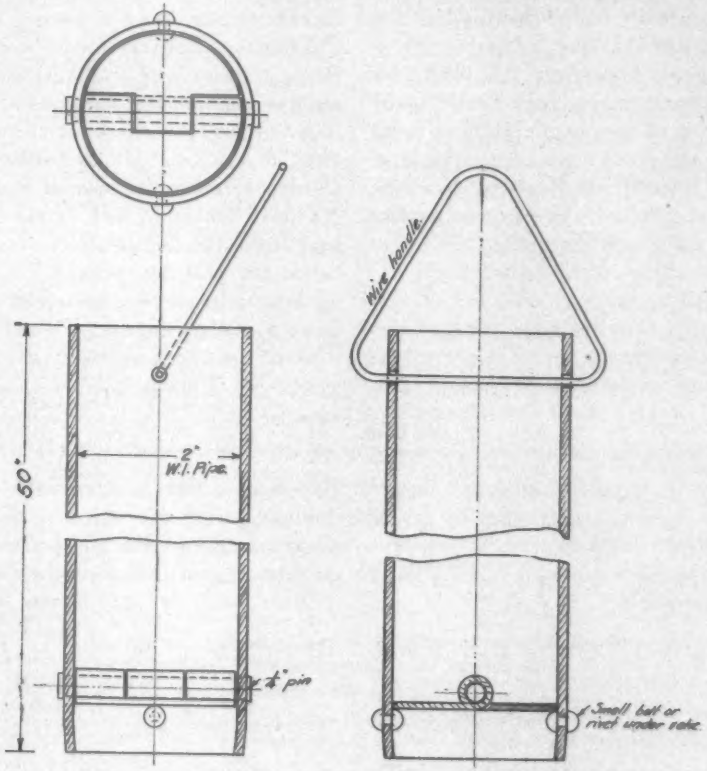
The suction line must be kept on the bottom and moved from one end to the other under the skimmers and partitions as the pumping proceeds; the air agitation having been stopped to allow the sludge to precipitate and be drawn out by the pump.

Method of Cleaning Accumulation of Dirt from Deep Drip

JAMES M. LANE, Public Service Gas Co., Jersey City, N. J.

RECENTLY we found it impossible to pump several deep well drips, due to an accumulation of dirt getting into the deep well cylinders and blocking them up. The drips mentioned are located at the foot of a tunnel shaft about 110 feet below ground level; one drip being at the foot of a 20-inch vertical line and the other two at the foot of 24-inch vertical lines.

The pumps are hand operated, having 2-inch suction lines with deep well cylinders located about 2 feet from the bottom. The 2-inch suction lines had been placed inside of 4-inch lines so that in case of trouble, they could be removed at any time, by sealing the 4-inch lines. Both the 2-inch and 4-inch lines being



Cleaning Bucket for Deep Well Pump

slotted at the bottom so as to permit a suction with the deep well cylinder.

As soon as the first drip began to give trouble, the 4-inch line was sealed off and the 2-inch line was drawn out. The bottom length of 2 inches, the deep well cylinder and the slotted opening below it were found to be packed solid with sediment apparently out of purifying boxes. This showed that the bottom of the 4-inch line was apparently also filled with this sediment having been drawn in by the suction of the pump. To blow it out with steam would have been unsatisfactory, as it would only scatter around the main and give us future trouble, and to remove the 4-inch line would have necessitated shutting off the 24-inch main.

A small bucket was made out of a 2-inch nipple, 8 inches long. A hole was drilled through the nipple, close to the bottom, and a pin riveted through. Two flaps were then hinged to the pin(so that as the bucket was lowered by a cable and the flaps forced down through the sediment, they opened up, and as the bucket was raised the weight of the sediment in it closed the flaps. It was necessary to add 4 feet of 2-inch pipe to the top of the nipple to give it weight enough to force it through the sediment.

After the 4-inch main had been bailed clean, a steam hose was lowered down, steam turned on and the slots of the 4-inch line blown out. After clearing the slots, the balance of the sediment was allowed to settle for several hours and the small amount which found its way back into the 4-inch line, was again bailed out with the bucket. The bucket worked satisfactorily and saved several hundred dollars expense, for without it, it would have been necessary to raise the 4-inch casing mains.

That public authorities in Great Britain have been keenly awake to the economic necessities of gas undertakings during the period of high prices is indicated by the following comparison of present and pre-war rates taken from an editorial in the January 26, 1921, issue of the *Gas Journal:*

PERCENTAGE OF INCREASE IN RATES AT PRESENT IN EFFECT FOR BRITISH GAS COMPANIES AS COMPARED WITH PRE-WAR RATES

South Metropolitan Gas Co.	122%
Gas Light & Coke Co.	87%
Commercial Company	100%
Brentford Gas Co.	129%
Croydon Gas Co.	117%
South Suburban Gas Co.	141%
Tottenham Gas Co.	154%
Wandsworth Gas Co.	138%

Great Britain has merely recognized that in the gas business as in any other business the law of supply and demand must work both ways—and that confiscation as a policy toward essential utilities is not *good* business for the community.

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ACETIC ACID
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

AMMONIA CONCENTRATORS
Michigan Ammonia Works, Detroit, Mich.

ARC LAMPS (Gas)
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

AUTOMATIC CONDENSATION RECEIVERS
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

BENCHES
J. H. Gautier & Co., Jersey City, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Gas Machinery Co., Inc., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BENCH IRON WORK
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

BOILERS (Gas)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Hugo Manufacturing Co., West Duluth, Minn.
Wm. Kane Mfg. Co., Inc., 1915 Adams St., Philadelphia, Pa.
Kidde & Co., 169 Chambers St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Ofeldt Gas Fired Boiler Co., Inc., Nyack-on-the-Hudson, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BOILERS (Gas for House Heating)
Dodd Heating Systems Limited, Toronto, Ont.
Kidde & Co., 169 Chambers St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

BOILERS (Waste Heat)
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS
Connersville Blower Co., Connersville, Ind.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.

BLOWERS, BOOSTERS, EXHAUSTERS (Continued)
Maxon Furnace and Engineering Co., Muncie, Ind.
The Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.
Wilbraham-Green Blower Co., Pottstown, Pa.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

BRAZING TABLES
Rathbone, Sard & Co., Albany, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BRICK, FIREBRICK
Gas Machinery Co., Cleveland, Ohio.
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Improved Equipment Co., New York, N. Y.
Laclede-Christy Clay Products Co., St. Louis, Mo.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
Missouri Fire Brick Co., St. Louis, Mo.

BROILERS (Hotel)
Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The De Matteis Broiler System Co., Inc., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
The Michigan Stove Co., Detroit, Mich.

BURNERS (Industrial)
American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Hale Manufacturing Co., Chicago, Ill.
Hugo Manufacturing Co., West Duluth, Minn.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The Maxon Furnace & Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
Tate-Jones & Co., Inc., 30 Church St., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.

BURNERS (Industrial)—(Continued)
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS
Andrews Engineering Co., Inc., Chicago, Ill.
By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Koppers Co., Pittsburgh, Pa.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS
The Brown Instrument Co., Phila., Pa.
The Cutler-Hammer Mfg. Co., New York, N. Y., and Milwaukee, Wis.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

CASTINGS (BRASS)
The Aws Mfg. Co., 398 Harman St., Brooklyn, N. Y.

CASTINGS (Grey Iron)
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
The Western Gas Construction Co., Fort Wayne, Ind.

CHARGING COAL
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

CHIMNEYS (Radial Brick)
Alphons Custodis Chimney Construction Co., Marquette Bldg., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners)
R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Riter-Conley Company, Pittsburgh, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners) (Continued)
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Godfrey Conveyor Co., Elkhart, Ind.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS
The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
The Aws Mfg. Co., 398 Harman St., Brooklyn, N. Y.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Hays Mfg. Co., Inc., Erie, Pa.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Peninsular Brass Works, Detroit, Mich.
Standard Brass Works, Detroit, Mich.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.

COMPOUND FOR CLEANING GAS METERS AND GAS STOVES
Standard Chemical & Supply Co., Cambridge A, Mass.

COMPRESSORS
Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y. (Air Compressors).
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS
Cruse-Kemper Co., Ambler, Pa.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The G. S. Blodgett Co., Burlington, Vt.
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS
S. R. Dresser Mfg. Co., Bradford, Pa.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS
The Meyercord Co., Inc., Chamber of Commerce Bldg., Chicago, Ill.

DYES, DISINFECTANTS, DRY COLORS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

ELEVATORS
Craig Ridgway & Son Co., Coatesville, Pa.
Phillips, Lang & Co., Chicago, Ill.

ENAMELS AND JAPANS (Heat Resisting)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

EXCHANGERS (Heat)
The Bartlett Hayward Co., Baltimore, Md.
Riter-Conley Company, Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL
Steere Engineering Co., Detroit, Mich.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
Aws Manufacturing Co., New York, N. Y.
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
The McRae & Roberts Co., Detroit, Mich.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Peninsular Brass Works, Detroit, Mich.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Standard Brass Works, Detroit, Mich.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.
The Western Gas Construction Co., Fort Wayne, Ind.
Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)
Detroit Brass & Malleable Works, Detroit, Mich.

FLEXIBLE TUBING AND ENDS
Atlantic Tubing Co., Providence, R. I.
Bishop Gutta Percha Co., 420 E. 25th St., New York, N. Y.
Eastman Mfg. Co., Manitowoc, Wis.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

FLASHLIGHTS AND BATTERIES
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Diamond Electric Specialties Corp., Newark, N. J.
Novo Mfg. Co., 424 W. 33rd St., New York, N. Y.

FUEL BRIQUETTING
Foundation Oven Corporation, Woolworth Building, New York, N. Y.

FURNACES
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace and Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

GAS RANGES
The Bartlett Hayward Co., Baltimore, Md.

GAS ENGINE COCKS AND VALVES
Standard Brass Works, Detroit, Mich.

GAS IRONS
A-B Stove Co., Battle Creek, Mich.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Benson Mfg. Co., Chicago, Ill.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LOGS
The Mead Gas Heater Co., Delawanna, N. J.
Strait & Richards, Inc., Newark, N. J.

GAS MAIN BAGS AND GAS MAIN STOPPERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York City.

GAS MIXERS
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Grinnell Co., Inc., Providence, R. I.
Haya Mfg. Co., Inc., Erie, Pa.
Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.
Hale Manufacturing Co., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace & Engineering Co., Muncie, Ind.
Strait & Richards, Inc., Newark, N. J.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Carbureted Water)

Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)

Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
National Machine Works, Shefield & North Aves., Chicago, Ill.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS

Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

GOVERNORS, PRESSURE VACUUM & PUMP

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

HEATERS (Room)

Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Geist Mfg. Co., Atlantic City, N. J.
Grinnell Co., Inc., Providence, R. I.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
The J. H. Grayson Mfg. Co., Athens, Ohio
Hugo Manufacturing Co., West Duluth, Minn.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
Masdon Mfg. Co., Cambridge, Mass.
New Process Stove Co. Div., Cleveland, Ohio
Reliable Stove Co. Div., Cleveland, Ohio
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Strait & Richards, Inc., Newark, N. J.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Mead Gas Heater Co., Delawanna, N. J.
The Ohio State Stove & Mfg. Co., Columbus, Ohio.
The Sanitary Heating Co., 233 37th St., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

HEATERS (Garage)

Kidde & Co., 169 Chambers St., New York, N. Y.
Masdon Mfg. Co., Cambridge, Mass.

HEATERS (Pressing and Soldering Irons)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Strait & Richards, Inc., Newark, N. J.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York City.
Selas Co., 521 W. 23d St., New York, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works))

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Riter-Conley Company, Pittsburgh, Pa.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

HOT PLATES

A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Michigan Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
Union Stove Works, 20 Beekman St., New York, N. Y.
Weir Stove Co., Taunton, Mass.

IRONING MACHINES

American Ironing Machine Co., 168 N. Michigan Ave., Chicago, Ill.
Barnett Foundry & Machine Co., Lyons Ave., Irvington, N. J.

INCINERATORS

Estate Stove Co., Hamilton, Ohio
Odorless Incinerator Co., Philadelphia, Pa.
Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
The Brown Instrument Co., Phila., Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
Steere Engineering Co., Detroit, Mich.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

INSULATING MATERIALS
Celite Products Co., 11 Broadway, New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.

KILNS (For Firing Glass, China and Pottery)
B. F. Drakenfeld & Co., Inc., 50 Murray St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

LIGHTERS (Ranges)
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Will W. Barnes, East Orange, N. J.
Milwaukee Gas Specialty Co., Milwaukee, Wis.
J. M. Sherwood Co., New York, N. Y.
Strauss Gas Iron Co., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Kramer Bros. Lamp Co., 585 Broadway, New York, N. Y.
Royal Art Glass Co., 243 Canal St., New York, N. Y.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)
Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Welsbach Co., Gloucester, N. J.

METAL RECEPTACLES
American Gas Furnace Co., 24 John St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METERS (Air and Steam)
Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.

METERS (Steam, Condensation, Oil, Hot and Cold Water)
Pittsburgh Meter Co., Gasoline, East Pittsburgh, Pa.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.

METER PROVERS
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER SHELF
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

OFFICE LABOR SAVING DEVICES
Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.
Remington Typewriter Co., 374 Broadway, New York.
Underwood Typewriter Co., Vesey St., New York, N. Y.

OIL (Diaphragm)
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

OVENS (Baking and Cooking)
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W. 42nd S., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Union Steel Products Co., Ltd., Albion, Mich.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

OVENS (Annealing, Japanning, Drying, Core, etc.)
Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
Gehnrich Indirect Heat Oven Co., Inc., 62 Franklin Ave., Brooklyn, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., New York, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.
Young Bros. Co., Detroit, Mich.

OVENS (Warming)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.

PAINTS (Metal Protective, Gas Holder, Acid Resisting, Coal Tar Pitch, Gas Resisting, Marine)
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

PHOTOMETERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, Boston, Mass.

PIPE
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Isbell-Porter Co., Newark, N. J.
Gas Engineering Co., Ingram Ave., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
National Machine Works, Sheffield & North Aves., Chicago, Ill.

PIPE PACKING
Celite Products Co., 11 Broadway, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave. Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)
Baltimore Enamel & Novelty Co., Baltimore, Md.
Eclipse Gas Stove Co., Rockford, Ill.
The Enamel Products Co., Cleveland, Ohio
The Porcelain Enamel & Mfg. Co., Baltimore, Md.
The Union Steel Products Co., Ltd., Albion, Mich.

PORCELAIN ENAMEL PLANTS (Installers)
The Porcelain Enamel & Mfg. Co., Baltimore, Md.

PRESSURE GAUGES
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.

PRESSURE GAUGES—(Continued)
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Brown Instrument Co., Phila., Pa.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Gas Machinery Co., Cleveland, Ohio
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
Nathaniel Tufts Meter Works, Boston, Mass.

PRESSURE GAUGES (Boiler, Naphtha, Oil, Steam, Tar)
M. T. Davidson Co., 154 Nassau St., New York, N. Y.

PUMPING ENGINES

PUMPS
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Nathaniel Tufts Meter Works, Boston, Mass.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y. (Centrifugal, Reciprocating & Sump).
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Newark, N. J.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Eph Lyon, Trust Company Bldg., Franklin, Pa.
Gas Purifying Materials Co., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.
Iron Hydroxide Co., Paschall Station, Philadelphia, Pa.

PYROMETERS
The Brown Instrument Co., Phila., Pa.

RADIATORS
American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
Cabco Sales Co., Gowanda, N. Y.
James B. Clow & Sons, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Kidde & Co., 169 Chambers St., New York, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Mead Gas Heater Co., Delawanna, N. J.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)
A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Chambers Manufacturing Co., Shelbyville, Ind.—(Fireless type)
Bartlett & Co., Inc., Philadelphia, Pa.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Dangler Stove Co. Div., Cleveland, Ohio
Eclipse Gas Stove Co. Div., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Gribben & Sexton Co., Chicago, Ill.
National Stove Co. Div., Lorain, Ohio
New Process Stove Co. Div., Cleveland, Ohio
Quick Meal Stove Co. Div., St. Louis, Mo.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Roberts & Mander Stove Co., Philadelphia, Pa.
Scott Gas Appliance Mfg. Co., Commercial House, Pottstown, Pa.
J. M. Sherwood Co., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Michigan Stove Co., Detroit, Mich.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Trenkamp Stove & Mfg. Co., Cleveland, O.
The Peninsular Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Union Stove Works, 70 Beekman St., New York, N. Y.
Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

RANGES (Hotel)
Geo. M. Clark & Co. Div., Chicago, Ill.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Eclipse Gas Stove Co. Div., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Roberts & Mander Stove Co., Philadelphia, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Mount Union Refractories Co., Mount Union, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
G. F. Schmidt, Chicago, Ill.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Cleveland, Ohio

REGULATORS (Governors)—(Continued)
Isbell-Porter Co., Newark, N. J.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Reynolds Gas Regulator Co., Anderson, Ind.
Steere Engineering Co., Detroit, Mich.
The Brown Instrument Co., Philadelphia, Pa.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Sprague Meter Co., Bridgeport, Conn.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REDUCING VALVES (Gas, Air, Steam, Water)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

REPAIRS (Gas Meters and Appliances)
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS
Gas Machinery Co., Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Riter-Conley Co., Pittsburgh, Pa.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The West Gas Improvement Co. of America, 150 Nassau St., New York, N. Y.

ROOF CEMENTS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

RUST PREVENTIVE
Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

SELLING AGENTS

SEPARATORS (Oil and Steam)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

SERVICE BOXES, CLAMPS, Etc.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

SOAPS (Industrial)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

SPECIALS—CAST IRON
The Western Gas Construction Co., Fort Wayne, Ind.

STEAM TRAPS
Plant Engineering & Equipment Co., Inc., (Corliss Valve) 192 Broadway, New York, N. Y.

STILLS (Benzol, Toluol)
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Koppers Co., Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

STOVES (Confectioners, Laundry, Tailor)
A-B Stove Co., Battle Creek, Mich.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

STRAINERS (Gas, Air, Steam, Water)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)

TANKS (Ammonia, Oil, Water)
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

TAR DEHYDRATION
The Sharples Specialty Co., New York, N. Y.

THERMOMETERS
Brown Instrument Co., Philadelphia, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Gas Instrument Co., Ingram Ave., Trenton, N. J.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS
Brown Instrument Co., Philadelphia, Pa.
Gas Machinery Co., Cleveland, Ohio
Kidde & Co., 169 Chambers St., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 372 W. 15th St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The H. A. Wilson Co., 97 Chestnut St., Newark, N. J.

THERMO VALVES
Brown Instrument Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Robertshaw Mfg. Co., Youngwood, Pa.

THORIUM
Welsbach Co., Gloucester, N. J.

(Continued on page 256)

Employment Bureau

SERVICES REQUIRED

WANTED—A syndicate operating a number of small coal and water gas plants requires an assistant in the Engineering Department. Must be an accurate and rapid draftsman with some experience in plant construction and operation. Unusual opportunity for training and experience with good future. In reply state fully experience, qualifications and salary desired, in order for application to receive attention. Address—A. G. A.

Key No. 11

WANTED—Foreman for Carburetted Water Gas Plant in a city of 100,000 population. U. G. I. sets. Opportunity for advancement. Apply stating experience and wages expected. Address A. G. A.

Key No. 13

WANTED—Man with sufficient experience to act as Foreman of Gas Department. Forty-five miles medium high pressure system; 2,600 service connections. Should have experience on meters, and house governor repairs, also water heater and range installation work. Give full particulars in first communication as to experience, salary desired, age, married or single, and former employers. Location New England. Address A. G. A.

Key No. 14

MECHANICAL ENGINEER—On operation, maintenance and efficiency of distribution system for gas company located in Western Pennsylvania. Requires men from 24 to 35 years of age, with qualifications to become an executive. Some experience on gas distribution and manufacturing desirable. Reply stating experience and salary expected and when available. Address A. G. A.

Key No. 15

SALES REPRESENTATIVE WANTED—Maker of well established and complete line of industrial gas appliances wants able salesmen with other non-conflicting lines to work on commission basis. Some highly profitable territory still is available. Write fully regarding your qualifications. This is a real opportunity. Address A. G. A.

Key No. 16

MECHANICAL ENGINEERS—Wanted by gas company in western Pennsylvania. Young man not over 30 years of age to assist superintendent in distribution work. Also one to assist plant superintendent. Technical graduate with at least one year's experience preferred. Reply stating education, experience, salary expected and when available.

Key No. 17

SERVICES OFFERED

WANTED—Position as Industrial Power and Fuel Engineer. Technical engineer and salesman of excellent qualifications for industrial power and fuel sales. Now employed $3000. Address—A. G. A.

Key No. 111

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by the N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.

Key No. 114

WANTED—A position with a gas appliance company having need for an all around man experienced in development and selling. Can furnish best of references. Address—A. G. A.

Key No. 116

POSITION WANTED—As General Superintendent or Engineer of good-sized company, by well known technical graduate of 18 years connection with the gas business. Experienced in every branch of the industry and has made good. Has been superintendent of one large company and manager of other smaller ones. Has himself laid mains, made gas, set ranges, purchased and sold appliances, etc., so that he knows the difficulties and the things to avoid. Noted for his ability to handle men. Well read and up-to-date in every particular. Address—A. G. A.

Key No. 117

WANTED—Position as manager in medium size town or as gas engineer by technical man with 9 years experience in all branches. Both syndicate and private operation. Has shown exceptionally good results. Address A. G. A.

Key No. 118

WANTED—Position as manager or superintendent with gas company in North Eastern States. Eight years experience in both coal and water gas. Married. Good references. Address A. G. A.

Key No. 119

WANTED—Position as General Manager of Gas or Gas and Electric Company in city of size or as assistant to chief executive in very large company. Operation, management, finance, rates and capitalization by Public Utility engineer of my broad experience. Address A. G. A.

Key No. 120.

WANTED—Position as assistant to engineer of small syndicate of gas and electric companies. Have had four years experience in engineering department of a holding corporation. Address A. G. A.

Key No. 121

WANTED—Position where nearly twenty years intensive study of carbonization, works operation, by-product recovery, and all details of apparatus and machinery peculiar to the manufacturing end of the business can be utilized to mutual advantage. Address A. G. A.

Key No. 122

WANTED—Position as Manager of a gas property, by a man who left such a position two months ago to become the Manager of a manufacturing company. Is 34 years of age; technical graduate, and experienced in all branches of the gas business. Reports and data available from past experience; also the best of reference. Address A. G. A.

Key No. 123

(*Continued*)

EMPLOYMENT BUREAU—(*Continued*)

EXECUTIVE AVAILABLE—An executive who has had some years experience in construction, operation and management of gas, electric power and traction properties will soon be open for engagement. Is specially competent in management of such properties in all branches including fare, rate, franchise, and valuation proceedings, labor matters and public relation. Will show record of successful work for fifteen years back with proofs to anyone interested. A. G. A. Monthly.

Key No. 124

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.

Key No. 125

WANTED—Position as salesman or sales manager with reliable gas or electric appliance manufacturer preferred. Address A. G. A.

Key No. 126

WANTED—Position as manager or sales manager of gas, electric or combined property or group of properties. Now employed by company with which applicant has been associated for several years. Excellent reasons for wishing to make change which, together with highest references will be furnished to owners interested in securing thoroughly competent executive. Address A. G. A.

Key No. 127

WANTED—Position as Superintendent of small company, in town of about 100,000 population or as Assistant Superintendent of some large holding company. New England or Central States preferred. Married, middle age, at present employed and can furnish good reference. Address A. G. A.

Key No. 128

WANTED—Position as General Superintendent or Superintendent of Manufacture, coal or water gas; life experience in same, at present superintendent of small plant; A1 references. Salary $200 per month. Address A. G. A.

Key No. 129

(*Classified Directory—Continued from page 254*)

TRENCH WORK
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

TURBINE (Steam)
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Isbell-Porter Co., Newark, N. J.
Plant Engineering & Equipment Co., Inc., 191 Broadway, New York, N. Y.
Steere Engineering Co., Detroit, Mich.
The Aws Mfg. Co., 398 Harman St., Brooklyn, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)
Acme Brass Works, Detroit, Mich.
Peninsular Brass Works, Detroit, Mich.
The Roberts Brass Mfg. Co., Detroit, Mich.

VARNISHES (Insulating and Compounds)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

WATER HEATERS
A-B Stove Co., Battle Creek, Mich.
American Heater Corporation, St. Louis, Mo.
Bartlett & Co., Inc., Philadelphia, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

WATER HEATERS—(Continued)
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Humphrey Co. Div., Kalamazoo, Mich.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
The Kompak Company, New Brunswick, N. J.
New Process Stove Co. Div., Cleveland, Ohio.
Peninsular Stove Co., Detroit, Mich.
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
The Trenkamp Stove & Mfg. Co., Cleveland, O.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Ruud Mfg. Co., Pittsburgh, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Heater Co., Cleveland, Ohio
The Hoffman Heater Co., Lorain, Ohio
The Lovekin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Toombs Mfg. Co., Geneva, Ill.

WATER SOFTENERS
The Refinite Co., Inc., Omaha, Neb.

WATER STILLS (Gas Heated)
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE
The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.
Steere Engineering Co., Detroit, Mich.

WOOD PRESERVATIVES
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

AMERICAN GAS ASSOCIATION, INC.

HEADQUARTERS 130 EAST 15TH ST., NEW YORK, N. Y.

Officers and Directors.

PRESIDENT	CHARLES A. MUNROE	Chicago, Ill.
VICE-PRESIDENT	HOWARD BRUCE	Baltimore, Md.
TREASURER	H. M. BRUNDAGE	New York, N. Y.
SECTIONAL VICE-PRES.	R. B. HARPER	Chicago, Ill.
SECTIONAL VICE-PRES.	HAROLD S. SCHUTT	Philadelphia, Pa.
SECTIONAL VICE-PRES.	GEORGE S. BARROWS	Providence, R. I.
SECTIONAL VICE-PRES.	W. H. PETTES	Newark, N. J.
SECTIONAL VICE-PRES.	M. C. ROBBINS	New York, N. Y.

GEORGE B. CORTELYOU	New York, N. Y.
DANA D. BARNUM	Boston, Mass.
SAMUEL T. BODINE	Philadelphia, Pa.
R. B. BROWN	Milwaukee, Wis.
HENRY L. DOHERTY	New York, N. Y.
ARTHUR HEWITT	Toronto, Can.
C. L. HOLMAN	St. Louis, Mo.
J. B. KLUMPP	Philadelphia, Pa.
A. B. MacBETH	Los Angeles, Cal.
THOMAS N. McCARTER	Newark, N. J.
EMERSON McMILLIN	New York, N. Y.
H. A. NORTON	Boston, Mass.
GEORGE D. ROPER	Rockford, Ill.
W. G. GRIBBEL	Philadelphia, Pa.
R. C. CONGDON	Atlanta, Ga.
L. R. DUTTON	Jenkintown, Pa.
F. H. KNAPP	Pittsburgh, Pa.

Section Officers.

ACCOUNTING—Chairman	W. H. PETTES	Newark, N. J.
Vice-Chairman	EWALD HAASK	Milwaukee, Wis.
Secretary	H. W. HARTMAN	Ass'n Head'qtrs.
ADVERTISING—Chairman	M. C. ROBBINS	New York, N. Y.
Vice-Chairman	A. A. HIGGINS	Providence, R. I.
Secretary	CHAS. W. PERSON	Ass'n Head'qtrs.
COMMERCIAL—Chairman	H. S. SCHUTT	Philadelphia, Pa.
Vice-Chairman	A. P. POST	Philadelphia, Pa.
Secretary	LOUIS STOTZ	Ass'n Head'qtrs.
MANUFACTURERS—Chairman	GEO. S. BARROWS	Providence, R. I.
Vice-Chairman	JOHN S. DeHART	Newark, N. J.
Secretary	W. W. BARNES	Ass'n Head'qtrs.
TECHNICAL—Chairman	R. B. HARPER	Chicago, Ill.
Vice-Chairman	H. R. COOK, Jr.	Baltimore, Md.
Secretary	H. W. HARTMAN	Ass'n Head'qtrs.

SECRETARY-MANAGER	OSCAR H. FOGG	Ass'n H'dquarters
ASS'T SECRETARY-MANAGER	LOUIS STOTZ	Ass'n H'dquarters
ASS'T SECRETARY-MANAGER	PERCY H. HALL	Ass'n H'dquarters
ASS'T TREASURER	W. CULLEN MORRIS	New York, N. Y.